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A framework to evaluate critically the health and safety strategies in supply chains in the UK

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**A FRAMEWORK TO EVALUATE
CRITICALLY HEALTH AND
SAFETY STRATEGIES IN SUPPLY
CHAINS IN THE UK**

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PhD

2008

**A FRAMEWORK TO EVALUATE CRITICALLY HEALTH AND SAFETY
STRATEGIES IN SUPPLY CHAINS IN THE UK**

**A thesis submitted in partial fulfilment of the University's
requirements for the Degree of Doctor of Philosophy**

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In collaboration with Shaylor Construction Ltd and Jaguar Cars Ltd

Abstract

This research aim to develop a framework to evaluate critically the effectiveness of health and safety strategies in supply chains in the UK was achieved through a range of objectives which included a review of literature on health and safety management in supply chains and small and medium-sized enterprises, an explanation of the effect of poor health and safety performance on organisations and analysis of factors that inspire health and safety management in organisations. Other objectives are the analysis of health and safety improvement strategies, an establishment of a basis for the development of a framework, the establishment of the perception and attitude to supply chain health and safety management, and the development of a conceptual framework based on ideal and best practices as well as theory that may be used to evaluate critically health and safety strategies in supply chains in the UK.

The study adopted a triangulated research approach which used a questionnaire survey to ascertain the views of respondents on some health and safety issues. These views were combined with observations of a case study organisation to underpin the basis for the framework.

It was established that the reliance on regulatory measures as means of improving health and safety standards in organisations is no longer advisable. An alternative and best strategy is the use of the influences inherent in supply chain relationships. There were noticeable improvements in the relationship of the case study organisation with its suppliers, and in the general awareness of supply chain health and safety management, when the framework that was developed was tried in their supply chain.

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Chapter 1

Introduction

1.1 Background

The aim and objectives of this research will be stated in this chapter. These have been informed by a realisation that in spite of the contribution of the small and medium enterprises (SMEs) sector to national economies, efforts at improving their performance (especially health and safety) have not produced intended results. Subsequently, an argument, that the health and safety performance of organisations (and in a special way, SMEs) can be significantly improved by utilising supply chain influences, will be put forward. However, this can only be achieved if organisations were to adopt and implement a framework that would enable them to evaluate critically their supply chain health and safety strategies.

A framework is used in this thesis to represent a set of policies, standards, materials, tools and activities that support and bring about an improvement in the health and safety performance of supply chains. This working definition is guided by the view of a framework as a system of rules, ideas or beliefs that is used to plan or decide something (Cambridge University Press, 2005). It is also not wrong to assume that the existence of a health and safety management system represents, to an extent, a commitment to occupational health and safety management by organisations. If this were to be the case, a health and safety management system not only encourages a greater awareness of health and safety issues, but also draws attention to the impact of poor health and safety on the performance of individual organisations and their business associates. It achieves this by establishing a structure which defines

responsibilities for implementation and feedback, as well as the evaluation and review of health and safety management strategies in all or specific parts of a supply chain.

Strategy, both as a concept and a field of study, has been extensively discussed (Steiner, 1979; Andrews, 1980; Treacy and Wiersema, 1993; Mintzberg, 1994). However, among all these views, the description of strategy as being a general framework which not only provides a guidance for actions to be taken, but is in itself shaped by the actions taken, such that a precondition for formulating strategy is a clear and widespread understanding of the ends to be obtained (Andrews, 1980) appeals to the author of this work. The author also recognises that there is very little agreement as to the meaning of strategy in the business world (Steiner, 1979). Thus, strategy is defined in this thesis as a set of actions through which an organisation, by accident or design, develops resources and uses them to deliver services or products in a way which its users find valuable, while meeting the financial and other objectives and constraints imposed by key stakeholders (Haberberg and Rieple, 2001).

Therefore, health and safety laws can be viewed as a strategy that has been adopted by an organisation as a means of safeguarding peoples' health, safety and welfare by protecting them from risks arising out of work activities (Health and Safety Executive, 1994). Additionally, these laws are also expected to ensure that employees use the facilities and resources that have been provided by their employers in a manner that will neither lead to damage to properties nor put them or others at risk (Health and Safety Executive, 1994). In spite of these provisions and expectations, there is an identified gap between the implementation of worksite health and safety

laws and non-compliance with these laws by small and medium sized enterprises (SMEs) (Lefebvre and Rocklin, 1997). This gap could have been caused by the obvious difficulties that SMEs experience in the interpretation of regulations (Vasie *et al.*, 2000), the recognition of relevant regulations, or even in their willingness to engage in communication with the HSE (Borley, 1997). It is argued here that it is only by providing help to these smaller businesses through channels already familiar to them that this situation can be reversed.

One of the major reasons why the provision of these aids to SMEs is necessary is that a failure by employers to provide a safe and conducive work environment, or the inability by employees to use these facilities appropriately, brings about costs (as a result of work place accidents, injuries, or ill health, as well as damage to properties in some cases) not only to individuals and organisations, but also to the society (Health and Safety Executive, 2003; Eurostat, 2002; Pickvance, 2003; Institution of Occupational Safety and Health, 2001). Furthermore, compliance with health and safety laws is further highlighted by the observation that a two way relationship exists between work and health, such that the health of workers considerably affect their ability to perform their jobs (Harrington *et al.*, 1998). Unfortunately, this relationship seems lost to many small business managers. Earlier works not only suggested that compliance with legislations and regulations varied among enterprise sizes, but also showed that small and medium-sized enterprises exhibit higher rates of non-compliance with legislations and regulations than their larger counterparts (Lefebvre and Rocklin, 1997; California Senate Committee on Industrial Relations, 1992).

Many views have been expressed on the issue of level of compliance to health and safety rules and regulation by SMEs and the possible reasons for is this. For instance, although it has been suggested that SMEs exhibit a higher level of non-compliance than their larger counterparts, Lansdown *et al.*, (2007) argue that SMEs not only take their health and safety responsibilities very seriously, but also avail themselves of any support mechanism that may be available them. Nonetheless, in spite of the awareness of the implications of non-adherence to health and safety best practices and regulations, and regardless of their best intentions, SMEs still exhibit dismal compliance to health and safety rules and regulations (Health and Safety Commission, 1998). This could be because “small firms often appear to be unaware of their legal obligations, do not realise the dangers of poor practice, do not think about the benefits of good health and safety practice and have insufficient resource to devote to health and safety” (McKinney, 2002; p. 38). There is a view that many SMEs with poor health and safety record do not always seek advice on health and safety matters directly from the health and safety executive for fear of being punished (Health and Safety Executive, 1997b).

Consequent to the above and in consideration of the contribution of SMEs to the economy (see section 1.1.2), many improvement initiatives have been carried out with a view to improving the health and safety performance of these organisations. However, because of the large population and wide spread nature of the SME sector, coupled with a tendency for them to be distrustful of the HSE and government agencies (Haslam *et al.*, 1998; Yapp and Fairman, 2006; Lansdown, 2007), this sector exhibits the characteristics of a hard to reach group. A hard to reach group is a group that for whatever reason is not easily reached through most traditional and

conventional methods (Whitnell, 2004). Health and safety is often given a low priority by small businesses in comparison to other business issues such as cash flow, sales, staffing and production which are considered more critical (McKinney, 2002), and unsurprisingly, improvement in the health and safety performances of SMEs has been identified as a priority by the Health and Safety Commission (HSC, 1998).

Literature findings suggest that many strategies have been used in the past to bring about desired improvements in the capabilities of organisations, for example in the application of modern business techniques in the day-to-day running of their organisations. Some of these techniques are concerned with effecting improvements in the operations of organisations (e.g. lean manufacturing), the management of the organisations' resources (kaizen, supply chain management), or the improvement of the working environment (health, safety and environmental management etc). With regards to improving the performance of health and safety strategies, the European Network for Workplace Health Promotion, 2001) identifies the following programmes that are used by organisations:

- internal Occupational Health and Safety (OHS) Service - this is used more by larger enterprises and is carried out using in-house expertise
- external OHS Service, whereby a group of enterprises or entrepreneurs join together to fund their OHS activities usually provided by an external body. It is used mainly as a minimisation strategy
- Good Neighbour Scheme - this scheme was originally introduced by the Irish Health and Safety Authority, but has since gained wide acceptance in the UK also. It is aimed at encouraging SMEs to improve health and safety activities using larger enterprises with good Health and safety infrastructures as mentors. The success of the scheme could be attributed to the fact that the scheme is voluntary,

is continuous or an on-going initiative. Additionally, it is suited to SMES because it is not expensive

There are however some other initiatives that are sector specific. For instance, the “Responsible Care” programme which is associated with the chemical industry represents the chemical industry's commitment to continual improvement in all aspects of health, safety and environmental (HS&E) performance and to openness in communication about its activities and achievements (Chemical Industries Association, CIA, 2003). It has also been suggested that since its adoption in the UK in 1989, this voluntary and rigorous programme of collective action by member companies of the Chemical Industries Association (CIA), has brought about noticeable improvements in health and safety management in these organisations (Chemical Industries Association, CIA, 2003).

The CIA has a “Responsible Care Management System Guidance” as well as a mandatory self-assessment process. The commitment by the CIA membership is total, and adherence to the principles and objectives of Responsible Care is a condition of membership. This commitment has ensured that health, safety and environmental performance, measured by a consistent set of indicators, have clearly improved. Furthermore, a national network of member companies, with extensive channels of communication to the public and its elected representatives (Chemical Industries Association, CIA, 2003) has facilitated the development of systems for mutual aid and sharing best practice.

Although these initiatives exist, there are still reservations about the effectiveness of some of these improvement initiatives in bringing about the desired improvements in organisations, especially SMEs (Walker and Tait, 2004). Authors like Rhodes and Carter (2003) further argue that some of these initiatives were inappropriate and of a poor quality such that SMEs have become unresponsive to them. There are also suggestions that these interventions failed to achieve the desired aims because they were not representative of the needs of the various enterprise sizes within the sector. As a result, SMEs still faced greater challenges than their larger counterparts in developing and maintaining worksite health and safety programmes (Stokols *et al.*, 2001).

A further argument could be advanced that some of these strategies (e.g. good neighbourhood scheme) mentioned failed because not only were participant organisations usually drawn from different industrial sectors and sizes that have very little in common, but also that these were not often tailored to meet the specific needs of SMEs. Subsequently, the suitability and sufficiency of these strategies have been greatly undermined by these shortcomings (Bibbings, 2003) to the extent that calls have been made for new approaches, such as cascading good practices using the supply chain network should be tried (Wright, 1998).

It is also important to remember that health and safety improvement initiatives, like other business initiatives in SMEs, are often affected by a lack of resources, capacity and capability (De Bruijn and Hofman, 2000). It should also be observed that the effects of these inadequacies can be mitigated effectively only through partnerships

and collaborations among organisations in a network. Although, there are reservations by bigger companies regarding the advantages of this type of initiative, there are benefits that could result from collaborative initiatives aimed at cascading work site health and safety good practices down the supply chain from major clients to suppliers. For instance, in a publication by the Faculty of Public Health and the Faculty of Occupational Medicine (2006), it was observed that good workplace health and safety standard leads to an improved employee recruitment, retention and performance. It also enhances company and brand reputation, thus minimising the negative impact of accidents (Tamarelli, 1995).

It may be difficult to prove that cascading good health and safety practices down the supply chain leads to a better supply chain relationships and performance. However, the argument by Horvath (2001) that in view of the fact that competition was now between entire supply chains, the competitive advantage of a company now depended on its ability to leverage the capabilities of its suppliers, further highlights the importance of an effective supply chain network in the sustainability of businesses. Some of the reasons for the increased level of interest shown in the health and safety performance of organisations have been attributed to factors such as the desire to reduce the huge cost of accidents and ill health to individuals, businesses, and the society (Davies and Teasdale, 1994; Mossink and De Greef, 2002). Other reasons include the shortcomings in the overall management performance by SMEs (Rhodes and Carter, 2003), as well as the strategic role of the SME sector in the economic stability and prosperity of nations. Most importantly, there exists a positive correlation between investments in health and safety measures, health and safety

performance, and overall performance of organisations as can be seen in Figure 1.1.1
(Source: Mossink and De Greef, 2002, p. 12) below:

Figure 1.1.1: Effect of health and safety on company performance (Source: Mossink and De Greef, 2002, p. 12)

1.2 Small and medium-sized enterprises and their contribution to the economy

The diverse nature of SMEs is such that most countries do not have an officially recognised single definition of what constitutes an SME. This disparity in definition has been acknowledged in several works. David Walters observes that the definition of what constituted an SME could be problematic (Walters, 2002). Hence, while it may be appropriate to define size by the numbers of full-time employees or their equivalent in some sectors, it would be more appropriate to use turnover in others (Bolton, 1971). As an example, while some classify enterprises based on the number of its employees, Walters (2001) observes that the use of size or “number of employees” as a criterion for definition has been criticised because of the discrepancy in the generally accepted upper limit figures, which not only differ from country to country, but also from sector to sector.

In the United Kingdom, a company (or group) qualifies as a small or medium-sized company (or group) if it meets two out of three criteria relating to turnover, balance sheet total or number of employees, as set out below, in its first financial year, or in the case of a subsequent year, in that year and the preceding year.

Table 1.2.1: The adopted definition of small and medium-sized enterprise in the UK (Source: Great Britain, 2004) (Data

removed for copyright reasons)

Category	No. of employees	Turnover	Balance sheet total

The official position of the European Union (2003) is that an SME is a firm with fewer than 250 employees and which has either a turnover of less than €50m or a balance sheet total of less than €43m. However, in the USA, an organisation is considered to be an SME if it is an independent business with less than 500 employees (SBA, 2002). In view of this discrepancy, the research will adopt the UK definition of an SME. And while references will be made to studies carried out using data from other countries such as USA, care would be taken to minimise generalisations. SMEs play vital roles in shaping the economy of nations through the provision of new ideas, products and services and, most significantly jobs (Ghobadian and Galleary, 1996; Iwasaki, 2000). In the United Kingdom, for instance, it is estimated that at the beginning of 2003, there were over 4.0 million business enterprises, made up of 99.2% small enterprises (0 to 49 employees), 0.6% medium-

sized enterprises (50 to 249 employees), and 0.2% large enterprises (250 or more employees) (Figure 1.2.1: Source of data: DTI Small Business Service, 2004) below.

Figure 1.2.1: Statistics of private sector businesses in the UK, at the start of 2003 (Source of data: DTI Small Business Service, 2004)

A similar impact is noticeable in the rest of Europe where there are in excess of 20 million SMEs employing more than 80 million people (The Europa, 2002). The SME sector is a major source of wealth creation and innovation and according to Arias-Aranda *et al.* (2001), also accounts for about 60% of the EU's Gross Domestic Product (i.e. the total market value of all final goods and services produced in Europe in a given year). Further details from the statistics show that the UK private sector business employed an estimated 21.7 million people, and had an estimated combined annual turnover of £2,200 billion. Out of this, SMEs accounted for more than half of the employment (58.2 per cent) and turnover (52.4 per cent). Small enterprises (0 to 49 employees) alone accounted for 46.2% of employment and 38.3% of turnover

(DTI Small Business Service, 2004). Small and medium enterprises, being suppliers of goods and services to larger organisations, remain the lifeblood to the contemporary economy, and as such these organisations herald broader economic development. Against this backdrop, it is most probable that some nations (countries) would not reach their full economic and social development potential if they ignore the SME sector (Ariyo, 2000).

The proposed framework would be judged by the extent to which it has been able to ensure that available resources have been used to improve health and safety standard/performance. With this in mind, the term evaluation is used in this thesis to mean an unbiased and careful assessment of the efficiency, effectiveness, and appropriateness of an organisation's strategy or activity. While commenting on these aspects of an evaluation exercise, Sharp (1994) notes that while the evaluation efficiency assesses how efficiently inputs have been converted to outputs, evaluation effectiveness assesses the extent to which outcomes have fulfilled stated objectives, and evaluation appropriateness assesses how relevant an activity is, and how accurately the objectives of this activity have addressed the needs of the stakeholders. In view of the fact that evaluations are carried out for different purposes (Owen and Rogers, 1999), these aspects (effectiveness, efficiency, and appropriateness) of the evaluation will be determined by the purpose for which the evaluation is being carried out. Subsequently, the evaluation process in this research will be used to assess to what extent any identified aim of the framework (as set out by the stakeholders) has been met. Stakeholders are defined here as "individuals or organizations who stand to gain or lose from the success or failure of a system" (Nuseibeh and Easterbrook, 2000).

1.3 Aim

The aim of this research is to develop a framework, based on ideal and best practices, as well as theory, to evaluate critically the effectiveness of health and safety strategies in supply chains in the UK.

1.4 Objectives

The objectives of the research are to:

- carry out a literature review of literature on health and safety management in supply chains and small and medium-sized enterprises
- explain the effect of poor health and safety performance on organisations and analyse factors that inspire health and safety management in organisations
- analyse health and safety improvement strategies
- establish a basis for the development of a framework to evaluate critically health and safety strategies in supply chains in the UK, based on theory, ideal and best practices
- establish perception and attitude to supply chain health and safety management
- produce a conceptual framework based on ideal and best practices as well as theory that may be used to evaluate critically health and safety strategies in supply chains in the UK

1.5 Overview of research approach

This research programme, although divided into four theoretical phases, had the implementation of these phases overlapping in many places. It adopts a triangulated research approach that makes use of both qualitative and quantitative research

methods. These are discussed in greater details in Chapter 4 - Research Approach.

Figure 1.5.1 below is an overview of the research approach used in this study.

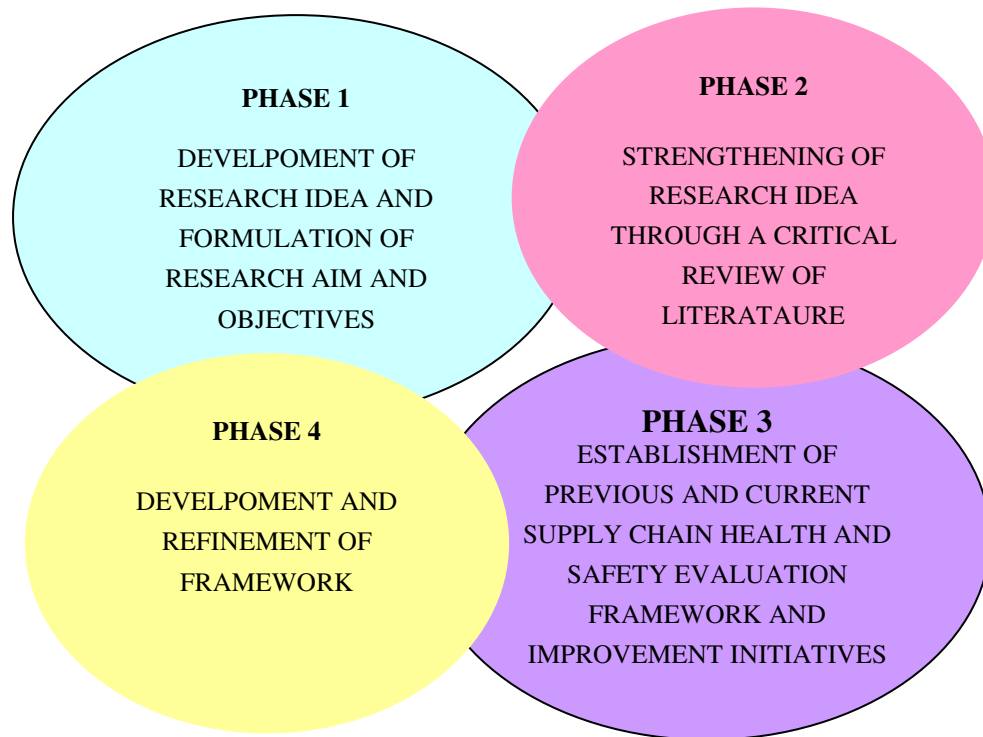


Figure 1.5.1: Overview of research approach

1.6 Summary of chapters

Chapter 1 introduces the background, aim and objectives of the research. Chapter 2 gives an overview of health and safety management. Some enabling legislations and regulations are also presented in this chapter. It also describes the techniques and systems used in managing health and safety in organisations. In consideration of the fact that accidents take a centre stage in any health and safety management review, Chapter 2 goes further to outline the remote and immediate causes of accidents as well as its cost to the society and organisations. Chapter 3 takes this further by reviewing literature on supply chain management. It also looks at some performance enhancing techniques (e.g. collaboration and partnering) used by organisations in

enhancing the competitive strength of their supply chain and the individual organisations that make up the chain. Based on the theoretical foundation established in Chapters 1 to 3, Chapter 4 explains the methodology to be used in developing a framework to evaluate critically health and safety strategies in supply chains in the UK. Chapter 5 goes on to explain the research survey that would help in justifying some of the elements included in the framework. This justification is based on the views of organisations on specific health and safety issues, such as the awareness of health and safety, motivations and constraints, the role of supply chain networks in improving health and safety standard. It also looks at the willingness of organisations to take part in supply chain initiatives aimed at improving health safety within their organisations.

Chapter 6 begins with identification of the different aspects of the framework, cross-referencing these to other sections of the thesis. Thereafter, the elements of the emergent framework are discussed, in addition to an explanation of how the framework was applied in a case study company. Chapter 7 concludes the thesis by providing a critical review of the research and shows its contribution to knowledge, as well as suggestions on further research needs. The processes that have been discussed in this section are shown in Figure 1.6.1 below.

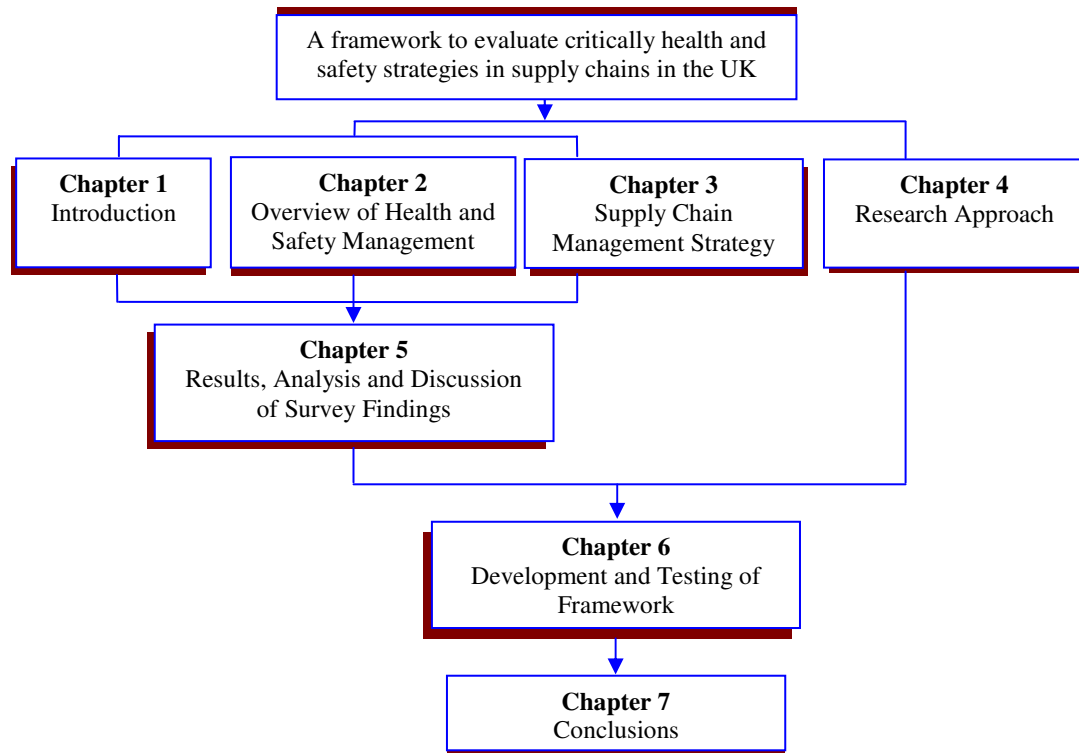


Figure 1.6.1: Outline of Thesis

1.7 Summary of thesis

The discussions and views presented in this thesis have shown that the level of health and safety standard in SMEs is lower than desired. Although there have been improvements in the interest shown by the regulators, academic and professional institutions, as well as industrial networks, the peculiar nature of the SMEs sector has made it difficult for improvement initiatives to yield desired results. These initiatives failed because they were inappropriate and did not cater for the needs of all stakeholders. The lack of involvement of all stakeholders in the design and implementation of these initiatives greatly undermined both the suitability and sufficiency of these in ensuring that desired improvements in health and safety are achieved.

The contribution of SMEs to the overall economy is substantial (Section 1.2). And the impact of any disruption in their operations (for instance through poor health and safety performance) on the supply chain could be significant. And as suppliers of goods and services to larger organisations, SMEs remain the lifeblood to the contemporary economy.

It was also highlighted that many that many organisations (especially SMEs) with poor health and safety record do not always seek advice on health and safety matters directly from the health and safety executive for fear of being punished. Thus, using an informal non-regulatory route, with which they are familiar and comfortable with, could enhance the level of health and safety performance. This reaffirms the need not only to study further the effectiveness of using other intervention routes such as using the supply chain network, but also to develop a framework to help in evaluating critically health and safety management strategies in supply chains in the UK.

However, before exploring supply chain management techniques that ensure improvements in the performance of organisations, Chapter 2 will be dedicated to discussing the basics health and safety management in organisations, its origins and legal background.

Chapter 2

Overview of Health and Safety Management

2.1 Introduction

This chapter presents an overview of accidents, by examining existing literature on health and safety with a view to defining what an accident is, its major causes and associated costs. It shall also discuss health and safety management systems and how they can help in reducing the rates and fatalities of accidents and ill health in organisations. In this chapter and throughout this report, the phrases ‘health and safety management system (HSMS)’, ‘safety management system (SMS)’ and ‘occupational health and safety management system (OHSMS)’ are used interchangeably. Emphasis will be placed on the identification of the essential elements of a health and safety management system, with a view to combining these with known supply chain management techniques, as a means of bringing about desired improvement in the health and safety standards of organisations.

To minimize the confusion between structured and non-structured efforts to minimize accidents, it is important to make distinguish between those activities which are seen to have been undertaken by an organisation and the actual existence of a safety management system. First, a system defines a “set of things considered as a connected whole; a plan of action; a method of procedure; method of organization” (Brookes *et al.*, 2003, p. 1537). Thus, a system as used in health and safety literature refers to the composition of humans, machines and the environment which interact in order to achieve a defined goal (Sanders and McCormick, 1993). Systems can also be purposive and hierarchical (that is, considered as being or forming parts of larger

systems) or a nesting of systems within a set system boundary (Sanders and McCormick, 1993). The inference from these is that a system operates in an environment which ensures the interaction of its various parts. Subsequently, the primary aim of occupational health and safety (OHS) is not only to ensure the maintenance of the working ability of the labour force, but also to ensure that hazards within the working environment are identified, assessed and prevented (Ahasan, 2002). It also ensures that workers carry out their jobs in safe environments, by establishing mechanisms that help to correct unsafe actions and eradicate unsafe conditions.

The argument by Scipioni *et al.* (2001) that accidents at work and occupational injuries are unintended consequences of production that are inextricably linked to the relationship of the worker to the plant, machinery, materials and substances present in the workplace, suggests that there is a relationship between work and work environment/facility. Subsequently, it becomes essential that activities which not only ensure safe conditions for work but also instil safe attitude to work are identified, developed and implemented. This argument suggests that health and safety interventions should be concerned not only with making the environment and equipment safe for use, but also with changing the perception and attitude of workers for whom these facilities have been provided for. Thus, work place safety involves technical interventions as well as the adoption of management, organisational, and training instruments that can influence risk behaviour (Scipioni *et al.*, 2001), through targeted intervention aimed at changing how things are done (Robson *et al.*, 2001, p. 1). This intervention may be in the form of a new program, practice, or initiative intended to improve safety (e.g., engineering intervention, training program,

administrative procedure). Interventions to improve organisational health and safety management or performance could be focused on activities aimed at improving the technical sub-system or the human sub-system as shown in Figure 2.1.1 (adapted from Robson *et al.*, 2001, p. 1) below.

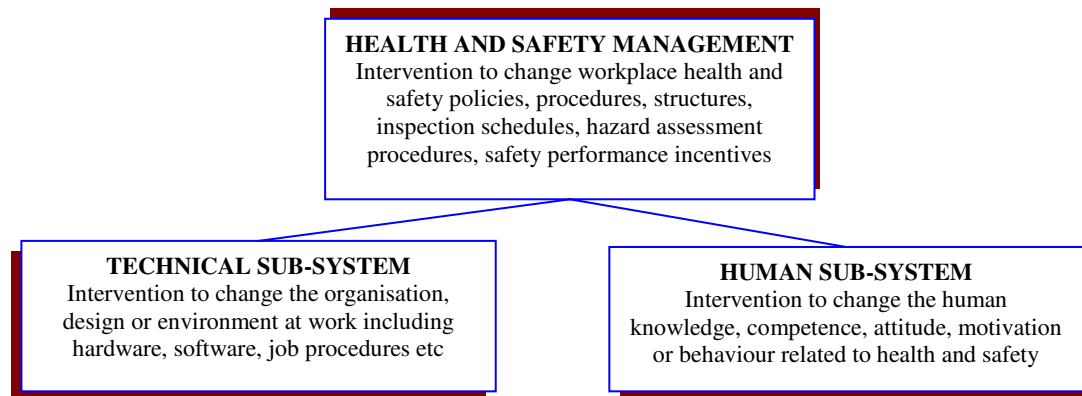


Figure 2.1.1: Different aspects of workplace health and safety management (adapted from Robson *et al.*, 2001, p. 1)

2.1.1 Importance of good health and safety management

There have been demands for explicit proof that good health and safety management adds to the capital value of a company by reducing or eliminating lost time injuries and property damage (Confederation of British Industry, 1990). The researcher concluded, based upon health and safety literature consulted, that these demands to an extent reflect the view that investments in health and safety improvement activities are often regarded as added burdens or imposed costs and not as a contribution to the overall competitiveness of an organisation. Nonetheless, while it will be conceded that the maintenance of a good health and safety standard is a resource intensive one, it should be pointed out that a good safety and health at work ethos brings economic benefits to organisations and as well as the society (European Agency for Health and Safety at Work, 2002). For example, Elgstrand (1985) note that improved health and

safety management, by ensuring better work conditions, enhances productivity and business profits. Some benefits of good health and safety management system in an organisation outlined in European Agency for Health and Safety at Work (1999) and White and Benjamin (2003) include a maximisation of the well being and productivity of employees, a reduction in the number of workplace injuries, illnesses and deaths, the protection of a company's reputation, a higher turnover and profitability, because of a lower costs associated with workplace accidents, a better relationships with contractors, as well as a minimised likelihood of prosecution and consequent penalties

In spite of the benefits derivable from the implementation of an effective health and safety management system notwithstanding, there are still doubts about the use of economic benefits as a justification for embarking on health and safety improvement activities. Nonetheless, businesses have continually re-organised in order to cut costs due to accident and ill health. Furthermore, health and safety management, being a key element of successful manufacturing organisations (Basu and Wright, 1997), has been acknowledged as having the potential to improve the competitiveness of a company.

As a result, ensuring a better health and safety standard in workplaces is gradually being used by businesses to drive forward their productivity improvement initiatives. Again, the adoption of this as a survival strategy is gaining popularity since organisations cannot indefinitely rely on downsizing for survival (Vasie and Lucas, 2001). Additionally, the view that high accident rates (which is a form of waste) are signs of management inefficiency, perhaps, influenced the decision by many successful organisations to place greater emphasis on the reduction of accident figures

through better health and safety management as a way of eliminating waste and inefficiency (Wokutch, 1992).

2.2 Overview of accident and its causes

Beach (1980) states that an accident is an unexpected occurrence that interrupts the regular progress of an activity, and could take place without an injury resulting. Whilst this definition seems to have considered every aspect of an accident, it is still inadequate as it fails to consider both the causes and effects of accidents. This inadequacy is further highlighted by the observation that accidents at work and occupational illnesses, as consequences of the production cycle, are inextricably linked to the relationship of the worker to plant, machinery, materials and substances present in the workplace (Scipioni *et al.*, 2001). In consideration of these views, a better description of an accident, perhaps, is that given in Bamber (2003) which defines an accident as an unexpected, unplanned, event in a sequence of events, that occurs through a combination of causes; results in a physical harm (injury or disease) to an individual, damage to property, a near-miss, a loss, or any combination of these effects.

These views suggest that workplace safety does not only involve technical interventions but requires the adoption of management, organisational and training instruments which can influence “risk behaviour” (Scipioni *et al.*, 2001). This view gives an impression that accidents result from chance factors that are unavoidable; an impression that seems misguided, as it has been observed that in nearly every instance of an accident, there are measures that could have been taken to avert the accident (Beach, 1980). Factors that can cause an accident are broadly classified into unsafe

conditions and unsafe actions as shown in Figure 2.2.1 (adapted from Burnett, 2005, p. 9) below.

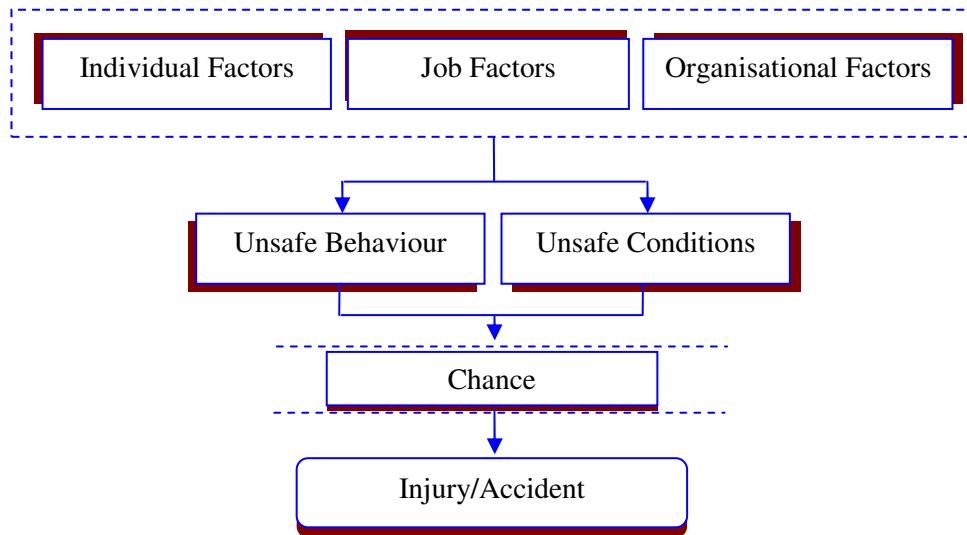


Figure 2.2.1: Accident contributory factors (adapted from Burnett, 2005, p. 9)

While Stranks (2000) believes that accidents are consequences of technical and human errors, Mill (1992, p. 3) argues that accidents and ill health are, sometimes, consequences of negligence, that if not properly identified and addressed through a safety and risk assessment process. It is not surprising therefore that many health and safety interventions are increasingly concerned with devising ways to improve management techniques and attitude to health and safety, than on merely improving on technical aspects (Health and Safety Executive, 1997b). If accidents were to be avoided, it is imperative that managers, team leaders, supervisors, and workers must co-operate and take part in the planning, organisation, execution, and control of operational activities. These management controls or safeguards that have been put in place with an aim to reducing the frequency or impact of accidents should be based on prevailing accident theories, if they were to have desired effect. This is because they

help in a systematic identification, isolation and eventual eradication of those factors that can cause accident(s).

2.2.1 Theories on the causes of accidents

Two popular accident theories are the Domino theory and the Systems theory. While accident investigation models that are based on the “system” theory tend to examine all potential contributory factors to any accident, those that are based on the “traditional” theory focus their investigation on the individuals concerned, and on the most immediate causes of an accident. Gudi (2006: p. 16) notes that:

“The Normal Accident theory or System Accident theory was proposed by Charles Perrow in an attempt to explain failures and accidents by trying to understand the nature of the systems themselves...System accidents involve the unanticipated interaction of multiple failures...Attention is not on individual components or isolated incidents that led to the failure”

This account not only captures the nature of normal accident theory but also gives an idea of the distinction between this and a traditional accident theory. Although, a better investigation would be achieved using the systems based models, the view by Thompsons Solicitors (2001) that the traditional approach is favoured more by organisations suggests that many organisations do not as yet operate a systems that would enable them to differentiate effectively between immediate and underlying causes of accidents during the investigation of accidents. Notwithstanding the complexity of the theories behind accident causation, these must be adequately understood if there are to be any meaningful improvements in accident prevention strategies. Even though these theories can be regarded as conceptual in nature, and perhaps of limited use in the prevention and control of accidents, it should be

recognised that no single theory could be considered right or correct, with a universal acceptance. Thus, these theories, although necessary, are not sufficient for developing a frame of reference for understanding accident occurrences (Raouf, 1998).

Although the Domino (or traditional accident approach) theory (Figure 2.2.2 below) considers accidents as consequences of unsafe acts and or unsafe conditions, these unsafe acts and unsafe conditions, do not however contribute in equal measures to accidents. For instance, it has been argued that about 88% of all accidents are caused by unsafe human acts, 10% by unsafe actions and the remaining 2% by “acts of God” (Heinrich, 1959). Therefore, the removal of these unsafe human acts which account for well over 80% of all accidents represents a very important step towards the prevention of accidents (Sznaider, 2000).

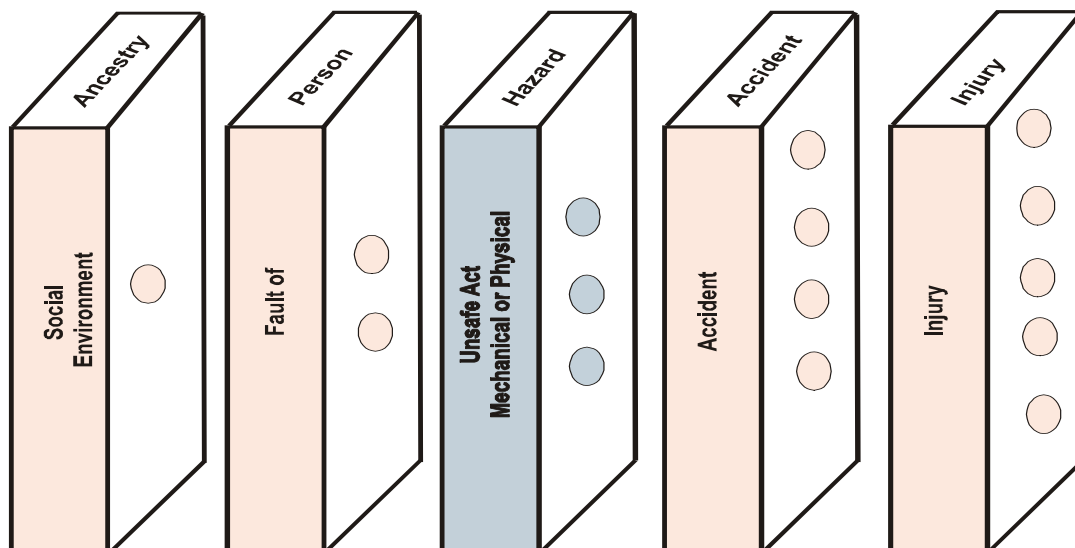


Figure 2.2.2: Causes of an accident – the Domino sequence (adapted from Heinrich, 1959)

Critics of this model argue that by adopting a narrow-minded view of accidents, this model fails to recognise that accidents result from multiple causes. Subsequently, the chances of identifying and solving the root causes of accidents become greatly reduced (Petersen, 1971). This is however not the only criticism of this model. For instance, Wright *et al.* (u.d) notes that in the domino theory of accident causation, there is not only an erroneous focus on what happened and how it happened rather than on why it happened, but there is also a restriction of an incident investigation to only a limited set of causes. Additionally, continues Wright and his colleagues, this theory seem to be instigating an assumption that the prevention of future occurrences could only be achieved through disciplinary or procedural approaches and a culture of apportioning blame to those most immediately involved. Also, interventions based on this model are often short term and ineffective because they are unable to address the remote conditions caused the incident

The systems theory or the **multiple Causation theory** is an offshoot of the domino theory. It however differs from it by recognising and amplifying the fact that accidents are often consequences of several contributory factors occurring at the same time, and thus aims to eliminate these contributory factors. The *system-based* approach to accident investigation recognizes that individuals possess intrinsic error vulnerabilities and tries to understand the full range of factors that contribute to an incident. As such, organisations that are in favour of this system are open-minded about the causes of unsafe behaviour. This attitude is informed by the view that individuals often work in error inducing circumstances. This approach addresses the underlying causes (i.e. organisational and management policies) of these conditions by first identifying the immediate causes of an incident (e.g. failure to adhere to laid

down procedure). An advantage of this approach is that by identifying the immediate and remote causes of an incident, it is proactively tackling the conditions that could lead to future incidents.

Another model of accident causation theory is the loss-causation model (Bird, 1974), which is shown in Figure 2.2.3 below (Source: Bird and Germain, 1990).

Figure 2.2.3: Accident or loss causation model (Source: Bird and Germain, 1990)

The loss-causation model is a practical and easily understood accident investigation model that could be used by all levels of management from first line supervisors upwards. It is a simple but thorough model which always seeks for, and asks fundamental questions about accident causation. This model represents a fairly complete system for the management, planning and control of industrial accidents. A major assumption in this model is that lack of proper control is often the root cause of major losses suffered by organisation. A loss for the purposes of this work is defined as a production problem, environmental pollution, property damage, personal injury, deterioration in employees' health, etc.

2.3 Cost of work related accidents, injuries and ill health

Work-related accidents pose major health and safety problems, and the

“Disruptions to production and bad publicity following an accident are just some of the costs for businesses and organisations. Demands on public services, such as health care and social security, also increase. Estimated member states costs due to work accidents vary from 1-3% of gross national product” (Mossink and De Greef, 2002: p. 5)

Accidents at work, in addition to having notable effects on employee health and company performance, also represent a considerable economic burden. These costs are either visible or invisible (Mossink and De Greef, 2002), obvious (direct cost) or hidden (indirect costs) (Confederation of British Industry, 1990). Examples of these include property damages, insurance as well as legal costs, medical expenses, wages and productivity losses. These costs are not always visible and organisations are not often aware of how much they spend as a result of work based accidents and ill health. For example, it was noted in Curran (2003) that the cost associated with health and safety incidents are up 300 to 400 percent higher than those recorded in company ledgers. Figure 2.3.1 (Source Davies and Teasdale, 1994) below summarises the different aspects of the cost of accidents and ill health at work.

Figure 2.3.1: Types of costs of accidents (Source: Davies and Teasdale, 1994)

Even in the circumstance that an ill-health or accident does not result in a tangible cost, Scipioni *et al.* (2001, p. 135) observe that,

it is commonly accepted that for every accident with consequences for the environment and/or workers there is a much greater number of accidents with no such significant consequences, or with consequences which only manifest themselves in the long term. There is an even greater number of so-called "almost-accidents" and risk situations which comprise the entire statistical population in which accidents occur.

A similar view to the above had been expressed by Heinrich (1959) as well as Bird and Germain (1966). Undoubtedly, organisations will inevitably be affected by the consequences of these ill-health and accidents if there are no adequate management controls put in place to stop accidents from happening.

There is a view that the cost of occupational injuries and ill health to the society is grossly underestimated (Loewenson, 1998; Pantry, 1999). This result from the tendency exclude the cost incurred as a result of brand equity damage, loss of consumer confidence, and diversion of management time, disruption in the supply chain activity, loss of employee morale, as well as loss of human lives (Baldwin and Anderson, 2002) during the calculation of damages. Subsequently, the European Agency for Health and Safety at Work (2002) identifies vvarious variables which will help organisations to identify the cost of accidents and ill health to them.

Unfortunately, the fact still remains that that poor health and safety standard lead to a loss of approximately 4% of gross domestic product (GDP) in many countries (International Labour Organisation, ILO, 1999). In the United Kingdom, KPMG

Consulting Ltd (2002) estimates that the financial cost of work-related accidents and ill health is between £12.42 billion and £17.74 billion (representing between 1.7% and 2.4% of GDP). Similarly, Callaghan (2002) observes that the effect of work related ill health and accidents on the workforce is enormous and an estimated 25,000 workers are laid-off work every year in the UK. In spite of this huge cost of accidents, Pantry (1999) observes that although managers and workers are aware of this, very few companies have the mechanism to identify and examine, in a systematic way, the costs of accidents, ill health and incidents of property damage, which are not always noticeable.

Although the insurance liability taken out by an employer offsets the cost of any accident or ill health occurring within its premises, it still remains a fact that these damages have been caused. It also appears that these insurance payouts, by shielding organisations from bearing the full costs of accidents, affect the organisation's desire to adequately manage health and safety in premises. However, it should be observed that only a small part of the huge financial and human cost of work-based accidents and ill health is met by the insurance liability taken out by the employer (Eaglesham, 1999). It is estimated that for every £1 spent as a direct cost of an accident, between £8 and £36 is spent as direct or uninsured cost (Health and Safety Executive, 1997a).

Pomfret (2000) believes that a break-even chart facilitates a better appreciation of the effect of disruptions in the production schedule on the profit of organisations. The effects of accidents on the profit of a company are illustrated in the following scenarios, which have been calculated based on the principles of economies of scale (i.e. as output increases, production cost per unit decreases).

Scenario 1: Production at full capacity

No of units produced = 400

Production cost per unit = \$1.75

Selling price per unit = \$2.50

But Total profit = (selling price - production cost) \times number of units produced

$$\therefore \text{Profit} = (2.50 - 1.75) \times 400 = 0.75 \times 400 \\ = \$300$$

Figure 2.3.2: Effect of accidents on profit (Source: Pomfret, 2000)

Based on the production capacity shown in scenario 1 above, the company makes a total profit of \$300.00. However, if the number of units produced were to be reduced to 300, the cost price per unit subsequently rises to \$2.00 as shown in graph no. 2 in Figure 2.3.2 above. This increase in cost of production leads to a reduction in the profit from \$300.00 to \$150.00 as shown in scenario 2 below. This implies that a reduction in production capacity by 100 units leads to a 50% reduction in profit.

Scenario 2: Production at reduced capacity without an increase in variable cost

No of units produced = 300

Production cost per unit = \$2.00

Selling price per unit = \$2.50

But Total profit = (selling price - production cost) \times number of units produced

$$\therefore \text{Profit} = (2.50 - 2.00) \times 300 = 0.50 \times 300 \\ = \$150$$

If in another scenario, there is a disruption in production schedule as a result of damage to equipment, loss of materials or manpower, the company would be forced to work overtime in order to maintain the same 300 unit production capacity as in scenario 2 above. Subsequently it incurs an additional \$1.25 variable cost. The effect of this increase in the production cost on profit is shown in scenario 3 below.

Scenario 3: Production at reduced capacity with an increase in variable cost

No of units produced = 300

Production cost per unit = \$2.00

Increase in variable cost = \$1.25

\therefore Production cost = $$(1.25 + 2.00) = \3.25

Selling price per unit = \$2.50

But Total profit = (selling price - production cost) \times number of units produced

$$\therefore \text{Profit} = (2.50 - 3.25) \times 300 = -0.75 \times 300 \\ = \$-225$$

This clearly shows that a reduction in production capacity by 100 units (due to an accident) and a corresponding increase in the variable cost caused a drop in profit from \$300.00 to \$75.00 or a 75% drop in profit. Additionally, a reduction in the disabling injury frequency rate (DIFR) of a company leads to a substantial

improvement in profit (Pomfret, 2002) as shown in Figure 2.3.3 below (Source: Pomfret, 2000).

Figure 2.3.3: Correlation between reduction in injury frequency and profit improvement (Source: Pomfret, 2000)

2.4 The fundamentals of health and safety law

In the United Kingdom, the prevailing health and safety legislation is the Health and Safety at Work Act (HSW Act) of 1974. This is a framework Act:

“... provides for goal setting law, taking account of levels of risk and what is “reasonably practicable,” with the overriding aim of delivering good regulations that secures decent standards and protection for everyone.” (Department Of the Environment Transport and the Regions, 2000, p. 8)

Although an HSW Act which relies on the philosophy of self-regulation (Lucas, 2001) and goal setting in order to prevent accidents (Gadd et al., 2000), it however imposes a range of duties on employers for health and safety at work designed to ensure that people can work in a safe and healthy work environment. Additionally, it ensures that anyone coming into contact with the workplace (e.g. customers, suppliers, sub-contractors) can do so without risk to their health. Although it is

accepted that factors such as the nature and enforcement of health and safety legislations are significant determinants of health and safety standards in organisations (Smallman, 2001).

There are, nonetheless, reservations about their effectiveness. There are arguments that legislative measures as well views expressed by some regulatory agencies affect the effective management of safety and health within some organisations (Walters, 1998). For instance, the Health and Safety Executive, UK takes the view that the implementation and operation of health and safety measures are issues for employers and employees to resolve through their procedures for industrial relations, and as such health and safety inspectors are instructed not to become involved until such procedures were exhausted (Walters and Gourlay, 1990). Thus, while the role that inspectors play in the informal encouragement of the application of the regulatory provisions may be significant, its extent is unclear (Walters, 1998).

The second is the discrepancies in the requirements of certain health and safety regulations. For instance, the Safety Representatives and Safety Committees Regulations 1977 (SRSC Regulations 1977) of The Health and Safety at Work Act 1974 in the United Kingdom states that only recognized trade unions have the right to appoint health and safety representatives. This however contradicts the EU Framework Directive 89/391, which not only requires the consultation of, but also the dissemination of relevant information to workers and their representatives over matters affecting their health and safety.

However, certain measures have been taken to correct these issues. For instance, where the existing Safety Representatives and Safety Committees Regulations 1977 do not apply, the Health and Safety (Consultation of Employees) (HSCE) Regulations 1996 ensures that employers can consult with their employees over matters affecting their health and safety, and give them the opportunity to elect health and safety representatives. Thus, even in a small, non-unionized establishment, there is still a legislative support for the participative management of health and safety. Specifically, Section 2(3) of the Health and Safety at Work Act 1974 specifies that all employers must have their own health and safety policy statement and this must be put in writing in those organizations with five or more employees (Health and Safety Executive, 2002a).

It could be argued that the HSW Act 1974 was promulgated in order to correct the lapses, such as the existence of too much law or fragmentation of administrative jurisdiction, of the pre-HSW Act 1974 Act. A converse view could be that the promulgation of this Act was influenced by both humanitarian and economic reasons as a way of reducing the excessively high rate of accidents which caused human tragedy, lost production and diverted resources.

Another possibility is that this has been conceived as a solution to the overly specific, piecemeal, prescriptive and reactive problems of the earliest health and safety regulations in the UK (Floyd and Footitt, (1999). This, continued Floyd and Footitt, was with a view to establishing a more self regulated system of health and safety management, in contrast to a highly regulated system enforced by external agencies. Thus, in spite of observed discrepancies, the HSW Act corrects many of the defects

(for example diverse administration, uneven protection of employees, inadequate enforcement powers, etc) of earlier Factories Acts (Watts, 2003). Furthermore, the HSW Act 1974 not only places broad general duties for maintenance of reasonable health and safety standard on employers, employees, manufacturers of industrial products, self-employed and occupiers of buildings where people work, but also provides for participation of both the management and workers in the identification and monitoring of workplace hazards (Stranks, 2000).

It could be concluded from the above that although many national laws are increasingly placing the responsibility for maintaining high health and safety standards on the senior management of organisations (Health and Safety Executive, 1997b), this nonetheless, remains the responsibility of all. Although it is expected that the enactment of health and safety laws would significantly raise health and safety standards in organisations, Smallman (2001) however argues that improvement in health and safety standard depends more on the level and nature of enforcement of health and safety legislations, and not necessarily the enactment of these. Even though health and safety regulations are put in place to reduce, and or mitigate the effects of accidents at work, these regulations could also affect the ability of some businesses to effectively manage the occurrence of workplace accidents and ill health.

As a result, these have neither improved the health and safety records of businesses, nor addressed those risks emanating from the interactions between interconnected or adjacent components, or failure of system interfaces (for example, human factors) (Johnson, 2002a). Again, the inability of some national health and safety laws to

impose the full costs of occupational accidents and ill health on the employer has been cited as a constraint to health and safety improvement in many establishments. Some suggested instruments that can be utilised effectively in making organisations and businesses feel the impact of workplace accidents and injuries can be found in Mossink and De Greef (2002, p. 14).

2.5 Health and safety management systems

A health and safety management system can be viewed as an integrated set of work practices, beliefs and procedures for monitoring and improving health and safety of all aspects of the operations of an organisation (Civil Aviation Safety Authority, 2002). According to the European Union (1997),

“the safety management system should include the part of the general management system which includes the organizational structure, responsibilities, practices, procedures, processes and resources for determining and implementing the major-accident prevention policy.”
(OJ No L10, 14.1.97, p. 30)

A health and safety management system facilitates risk assessment through the identification, classification and management of risks, thereby providing a framework for sound business. The main objective of a safety management system is to either reduce (or eliminate) the probability that a particular risk will occur or to mitigate its effects if it does happen. It has to be recognised that improvement of health and safety standard is a long-term challenge that requires the awareness, involvement and commitment of all personnel (Civil Aviation Safety Authority, 2002). Furthermore, taking health and safety seriously not only ensures the fulfilment of moral and legal obligations, but also saves money by preventing the visible and invisible (non-

insurable) cost of accidents and incidents. A good health and safety record is also a valuable attribute when furthering links with potential clients/partners.

While poor safety management has been identified as a prime cause of modern disasters (Johnson, 2002b), there are strong indications that an effective safety management system provides financial benefits to a company by reducing the cost associated with lost-time accidents and shutdowns. However, to benefit from these, organisations should adapt existing management systems to suit their individual circumstances (OECD, 1999). It is becoming increasingly obvious that the development of an effective safety management system, whose function is to provide a framework for managing all elements of an organisation can have an impact on safety and risk, representing a move towards a proactive and pragmatic approach to risk management and control (Johnson, 2002b). Subsequently, many national laws are explicit in their requirement that organisations and establishments put in place an efficient system for health and safety management at work, risk identification and prevention. In the European Union, this requirement is contained in the EU Council Directive 89/391.

While organisations are encouraged to develop and implement a health and safety management system, they are also reminded that a good safety management system recognises that human actions and behaviour have great influences on how health and safety is managed. It also acknowledges the contribution of organisational behaviour and culture to a safe working regime (McLeod, 2004). The importance of this recognition cannot be overemphasised as the degree of safety in an organisation is influenced by the interrelated activities of people who design the organisation,

manage, and operate it (Santos-Reyes and Beard, 2002). The input from these different sources can only contribute meaningfully to the progress of the organisation if they are coordinated using a framework.

A safety management system helps organisations to identify possible lapses and weakness or failures in the management structure, which has been cited as being responsible for a large proportion of reported major accidents in Europe (Loupasis *et al.*, 1999; Kawka and Kirchsteiger, 1999). Although there are divergent views on what constitutes a management failure (often cited as causes of many accidents). Health and Safety Executive (1997b) provides a good basis for understanding this by noting that although accidents arise from failure of control and involve multiple contributory elements, of which the immediate causes may be human or technical failure, they usually arise from organisational failings which are the responsibility of management. A safety management system provides a solution to these failings by ensuring the development of successful policies aimed at utilising the strengths of employees in minimising the contribution of human limitations and fallibilities by examining how the organisation is structured and how jobs and systems are designed (Health and Safety Executive 1997b). Subsequently, senior management's commitment to health and safety has a considerable impact on the success of safety management systems, so much so that that it has been observed, for instance by Dejoy (1985), that the safety performance of an organisation is a reflection of how its senior management perceive the causes of safety performance.

The above views do not in anyway overlook the contribution of employees to accidents. For instance, Nishgaki, (1994) notes that the attitude both employers and

employees to safety contribute equally to the safety performance of an organisation. A typical instance of this is the observation that employees occasionally refuse to abide by the safety rule of an organisation as laid down by its management (Harper and Koehn, 1998; Holmes, 1999).

Also in Taylor (2006) it was observed that although a reform in a Dutch company was initially resisted, a continued effort to involve workers and their representatives brought about a widespread support of the reform in the company. A safety management system also bridges any gap that may exist in the awareness of onsite health and safety situation by the senior management. This is especially in cases where the desire by high level management to actively pursue good health and safety management practices in their organisations may be hampered by their limited experiences of on-site safety issues which often make it difficult for them to relate adequately to the needs of the workers (Dejoy, 1985). In situations like this, the existence of appointed safety representatives help in directing the attention of high level management to on-site health and safety issues (Jaselskis, 1996).

Although a health and safety management system (HSMS) plays an important role in controlling hazards, nevertheless, for it to be effective, organisations must adopt a proactive approach to health and safety management, so that hazards are identified before a major disaster occurs. The achievement of this objective requires the integration and strengthening of the organisational structures, as well as the complex norms and procedures that guide a company (Zani and Riva, 1999), through the development of a framework that would help in the evaluation of health and safety management strategy.

Gallagher *et al.* (2001) note that the successful implementation of an effective occupational health and safety management system (OHMS) can be affected either by a failure to customise these systems to suit the needs of a company, or the imposition of this management system on the organisation without due consultation. It is important to note that any form of imposition is capable of weakening senior management commitment and leads to poor employee participation. Other factors according to the Australian Civil Aviation Authority include failures in organisational structures (Civil Aviation Safety Authority, 2002), as well as an inappropriate use of audit tools, such as when they are used as a means of apportioning blames and not as a corrective measure.

There is a view that the freedom given to the management of organisations to define what is reasonably practicable, as practiced in the UK, encourages an exploitation and or manipulation of health and safety regulations. Even though, McLeod (2002) observes that establishing what is reasonable and practical is a subjective issue and as such prone to varying interpretations, a risk is judged to be reasonably practicable if and only if the time, effort and expense needed to avert it significantly outweighs the risk itself (Health and Safety Executive, 1997b). Thus, an employer is not bound to take measures to avoid or reduce the risk if they are technically impossible or if the time, trouble or cost of measures would be grossly disproportionate to the risk (Health and Safety Executive, 2003a).

Although there seems to be no consensus on the origin of health and safety management systems, a popular however is that health and safety management systems emerged in the mid 1980's as a key accident prevention strategy. For

instance, there is an observation that the Bhopal disaster in December 1984 became a major catalyst to the current level of attention paid to health and safety management systems, especially in the process industries (Sweeney, 1992). There are views that the formative period of health and safety management programs was between 1950s and the 1960s, a period which was characterized by the integration of concepts and techniques from other disciplines into safety management (Petersen, 1988). This view is in line with an earlier observation that the concept of a systems approach to health and safety management had been evident since the 1960s (Lees, 1980). These views suggest that health and safety management systems could not have emerged in the form in which it is now.

A health and safety management system could be reactive (or the traditional) or proactive (Bottomley, 1999) in its approach to the containment of accidents and ill health at work. Major differences between these two approaches are that while the traditional approach makes use of safety programmes which are focused on compliance with standards and regulations to bring about better health and safety management, the systems approach looks at four factors – the input, the process, the output and the feedback, and how to influence workplace health and safety. Secondly, while the pro-proactive approach has a very good feedback mechanism, the feed back mechanism in the traditional approach is either inadequate or non-existent. Again, in the reactive approach, because there is no link between risk control measures, risks are reviewed and control measures put in place only after an incidence had occurred. In contrast, in the proactive approach, hazards are identified and risk control and remediation measures put in place as a good management practice. Also,

in the reactive approach, there are no clearly defined roles and responsibilities whereas in the proactive approach, roles and responsibilities are clearly defined.

Although there has been a shift from a reactive to a proactive attitude to safety management (Weibye, 1996; Crawley, 1999), there is still no clearly defined and universally accepted criteria that may help organisations to establish an effective safety management system (Santos-Reyes and Beard, 2002), even though there is a view that a proactive attitude to health and safety management helps in preventing accidents that could have occurred (Gupta, 2002). Again, a proactive attitude to health and safety management saves many lives and substantial amount of money in potential accident damage (Kletz, 1998; Sutton, 1999).

The effectiveness of a proactive approach in actually controlling the actions and behaviours of those involved in a company's operations depends on the consistency of efforts to define and document a clear safety policy and responsibilities. It also depends on the level of acknowledgement of the inter-connection between various departments, as well as a clearly defined system of norms, incentives, and procedures agreed with those working in the company (Zani and Riva, 1999). The business benefits of a positive and proactive approach to tackling risk at work include: enhancement of corporate reputation in business dealings; improvement in quality and reliability as a result of a reduction in errors, accidental damages and losses; encouragement of workforce participation, innovation, as well as a boost to the morale of the workforce (Bibbings, 2003).

Most health and safety management systems are based on either the British Standard (BS 8800) (Figure 2.5.1 below) or the Occupational Health and Safety Assessment Series (OHSAS 18001) (Figure 2.5.2, Source: British Standards Institution, 2002, p. 5 below).

Figure 2.5.1: BS 8800 management system – HSG65 model

The BS 8800 is a guide produced by the British Standards Institute (BSI) in 1996. It explains the relationship that exists between the day-to-day management of an organisation and the various elements of occupational health and safety management. The OHSAS 18001 on the other hand, is an international standard produced in 1999 in response to calls for a unified system of occupational health and safety assessment.

Figure 2.5.2: BS 8800 management system – ISO 14001 model (Source: British Standards Institution, 2002, p. 5)

A major difference between these standards is that while the BS 8800 standard is a guide, the OHSAS standard is a specification. As a result, the OHSAS 18001 is more emphatic in its requirements and uses the word ‘shall’ in ensuring that these are adhered to.

2.5.1 Elements of safety management system

The European Agency for Safety and Health at Work (European Agency for Health and Safety at Work, 2001) argues that any successful accident prevention strategy is based on strong management commitment, good employee involvement, and a well structured management system. While Gilkey *et al.* (2003) believe that “the support of good management is fundamental to the success of any safety and health program”,

Quinlan and Bohle (1991) argue that any strategy for the implementation of an effective safety management system entails the development and dissemination of an OHS policy, a clear definition of health and safety responsibilities of all employees, the development as well as maintenance of a clearly defined policy making and advisory channels, and a well defined procedures for the collation and evaluation of data. The International Labour Organisation (2001) further states that a health and safety policy is a concise and clearly written and dated document endorsed by the most senior accountable person in an organisation. This document lays the a general health and safety management intent of an organisation, specifies duties and outlines chain of command, as well as the procedures for ensuring that appropriate health and safety standards are maintained (Stranks, 2003).

The various elements that make up a safety management system have been discussed in earlier works by (International Labour Office, 2001). They include organisational policy, organisational structure, communication, decision-making process, risk assessment, reduction and control, and are discussed briefly below:

Policy: Policy making as noted by Drucker (1994) is one of the three fundamental tasks of management. And in the field of health and safety management, its role remains pivotal. The British Standards Institution (British Standards Institution, 2004) lists what an effective occupational health and safety policy should contain and demonstrate. Cox and Cox (1996) describe policy as the way in which an organisation adapts itself to the challenges and opportunities within its safety domain and often describes the principles underpinning its behaviour. This process of health and safety policy development should however be distinguished from the need by

organisations to satisfy the legal requirement to produce a written company health and safety policy.

Organising: This is the establishment of structures detailing responsibilities and relationships such that would promote, and ensure the implementation and development of the safety policy. The effectiveness of this element of a health and safety management system depends on the synergy among management control, level of cooperation, efficiency and effectiveness of communication, as well as the level of competency by staff and management. Further information on this is available from Health and Safety Executive (1997b).

Planning and implementing: Cox and Cox (1996) argue that planning and implementation are the two elements at the heart of a successful management. British Standards Institution (2004) went further to note that planning is an integral part of all elements of an occupational health and safety management system and refers explicitly to the development of plans for continual improvement and the design, development and implementation of risk assessment and control. Effective planning aims at prevention through the identification, elimination and control of hazards. As a result, it should be a collaborative effort involving individuals throughout the organisation, hence demonstrating and gaining commitment to continual improvement as well as promoting a positive health and safety culture.

Planning an occupational health and safety management system involves designing, developing and installing suitable management arrangements, workplace precautions and their associated risk control systems proportionate to the needs, hazards and risks

of the organization. It also entails operating, maintaining and improving the system to suit changing needs and process hazards and risks. Implementation on the other hand is concerned with ensuring that workplace precautions, risk control systems and management arrangements are well designed and developed taking into consideration existing business practices and stakeholder needs.

This is particularly important as it has been noted that the long-term success of any organization is to a great extent influenced by the extent to which it strives to integrate and balance the needs and requirements of its various stakeholders without compromising (partially or completely) anyone (Nickols, 2000). Thus, an effective health and safety planning and implementation strategy is one which not only fulfils the business needs of the various stakeholders (such as a concurrent achievement in cost minimization, profit maximization and a high health and safety standard), but also ensures that costs, profits, health and safety standards and long term goals are compared and addressed as a means of further improving the effectiveness of the entire process (Madu, 1996). Planning also ensures that the components of the management system are adequately inspected, maintained and monitored to ensure continued effectiveness. Three major areas identified in both BS8800 and OHSAS 18001 standards that need to be addressed during the planning stage are:

- Risk Assessment and Management, which ensures that an organisation, through the process of risk management, identifies and appreciates all significant occupational health and safety hazards facing it
- Legal requirements, whereby a careful study of the business operations of an organisation is carried out, with a subsequent identification of not only the legal requirements applicable to it but also any other industry or company specific requirements to which it subscribes

- Health and safety objectives and programmes, detailing the measurable health and safety performance goals which an organisation set for itself to achieve

However, it would be difficult to establish adequate health and safety objectives and measurable without first carrying out a comprehensive needs assessment. A needs assessment is defined as a systematic exploration of the way things are and the way they should be (Stout, 1995). A needs assessment is a valuable tool which helps to highlight improvement needs because of its ability to measure the extent and nature of the needs of a particular target population, explains what the problem is and why it exists, and subsequently provides services to respond to these needs (Hooper 1999). While it may be tempting to compare identified needs to a list of competencies to determine if appropriate needs are covered, the Centre for Effective Performance however argues that while this technique is credited as being time efficient, it neither overcomes a specific performance problem nor improves the overall performance (CEP, 2006). It would be extremely difficult for a needs assessment to yield the desired level of improvement in performance if it does not:

- perform a "gap" analysis to identify the current skills, knowledge, abilities, as well as organisational and personal needs (Rouda and Kusy, 1995). These needs must however be agreed by all stakeholders (CEP, 2006)
- identify the importance of possible activities and prioritise these activities according to their importance (Rouda and Kusy, 1995)
- identify the causes of gap in performance and/or opportunities (Rouda and Kusy, 1995). Possible causes could be lack of skills or knowledge, or motivational obstacles preventing desired performance (CEP, 2006)
- identify possible solutions and growth opportunities (Rouda and Kusy, 1995) while ensuring that proposed solutions are both realistic and relevant (CEP, 2006)

It is expected that a structured approach to management would ensure that risks are fully assessed, and that safe methods of work are introduced and followed (European Agency for Health and Safety at Work, 2001). The reality may be far from the ideal if the team responsible for the assessment does not include those who know and care about the needs of the target (such as representatives from the target population) or those who can influence changes, such as managers of appropriate partner organisations (Hooper and Longworth, 2002).

Measuring performance: According to British Standards Institution (2004), the primary purpose of measuring health and safety performance is to judge the level of implementation and effectiveness of the arrangements that have been put in place for controlling risk. Cox and Cox (1996) argue that by enabling managers to ensure that standards achieved in practice are in line with the key objectives already established, performance measurement thus becomes an essential aspect of maintaining and improving safety performance. It should provide information on both the progress made as well as the current status of the arrangements (strategies, processes and activities) used by an organization to control risks to health and safety. Thus, this element of a safety management system controls the risk by providing information on how the system operates in practice, identifying areas where corrective action is necessary, providing a basis for continual improvement, and providing feedback and motivation

Performance can be measured proactively by monitoring the achievements of plans as well the level of compliance with standards, or reactively by monitoring accidents, occupational ill-health and near miss data (Health and Safety Executive, 1997b).

Reviewing performance: There are two review processes, namely periodic status review and management review that are the major drivers for continual improvement. While the periodic status reviews are carried out at an appropriate level within the organization, management reviews, are on the other hand undertaken by top management. The periodic status review considers the overall performance of the safety management system as well its component parts, and enables a decision to be made on the adequacy of performance throughout the organization. Its with its output utilised in making decisions about the nature and timing of actions necessary to remedy deficiencies or compensate for changes.

In the management review, the top management periodically reviews the organization's health and safety management system, to ensure its continuing suitability, adequacy and effectiveness. It includes an assessment of opportunities for improvement and any need for changes in the management system. Its output should include any decisions and actions related to any likely change to occupational health and safety policy, objectives and other elements of the occupational health and safety management system, consistent with the commitment to continual improvement.

Auditing: British Standards Institution (2004) advocates that in addition to measurement of OH&S performance and periodic status reviews there should be periodic audits that enable a deeper and more critical appraisal of all the elements of the OH&S management system. It further observes that the programme of audits should be proportional to the nature of the organization's hazards and risks, and should be conducted by competent persons independent of the area or activity being audited, if maximum benefit were to be achieved. Although audits can be

comprehensive or address selected topics according to circumstance, the results of these should be made available, communicated and corrective action taken as required. Cox and Cox (1993) make a distinction between an audit process and inspection and routine monitoring, arguing that audits provide objective and formally documented reviews of the whole management system.

Furthermore audit of a safety management system is carried out to establish its effectiveness in achieving the stated aims of preventing or reducing the rate and fatality of accidents in workplaces. It is quite a complex process and requires good management practice to ensure a systematic process. The different interpretations to the meaning of OHSMS pose a difficulty in evaluating the effectiveness of HSMS. Nonetheless, KPMG Consulting (2001) argues that safety audits are used to measure observable and real commitment of management to OHS, penetration of OHS policy to the shop floor, as well as the commitment of the enterprise and its workforce to the policies that have been put in place. KPMG Consulting (2001) further notes that features of an effective safety audit system include a systematic inspection and validation, benchmarking, establishment of ownership of a systematic approach through training of company representatives, as well as the ability to track performance overtime.

2.5.2 Motivations for implementing health and safety management systems

Different organisations are motivated to manage health and safety by different reasons Wright (1998). These motivators, are divided broadly into intrinsic (cost reduction, morale improvement, and reduction in frequency of accidents) and extrinsic (compliance with regulatory requirements, fear of loss of credibility, customer

requirements). These motivators invariably will trigger a variety of operational responses by organisations as shown in Figure 2.5.3 (adapted from Holt and Kockelberg, 2003, p. 682) below.

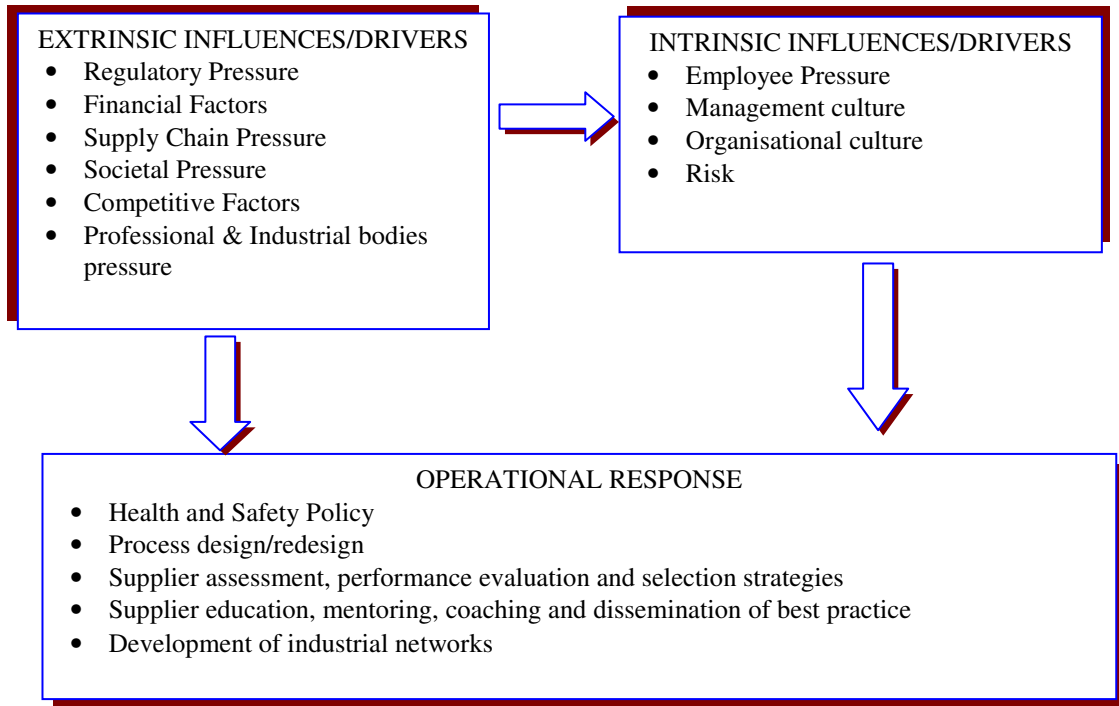


Figure 2.5.3: Factors driving supply chain health and safety management (adapted from Holt and Kockelbergh, 2003, p. 682)

Some of the arguments on the need for organisations to implement health and safety management systems rely on the business case, hence the slogan ‘Good Safety and Health is Good Business’. Smallman (2001) believes that there is a well established economic case for “(re) vitalising” health and safety management. However, the effectiveness of the continued use of the “Good Safety and Health is Good Business” slogan as a motivating factor for better health and safety management in small businesses has been questioned (Bibbings, 2002; Wright, 1998). There is a view that the ‘business case’ alone cannot be regarded as a self-sustaining health and safety

driver as it provides only a degree of comfort or reassurance for decision makers rather than a tool for making economically based decisions.

It may however be more persuasive to focus more on the psychological consequences of an accident and on the positive feelings of responsibility as a way of motivating [small] businesses into better occupational health and safety management systems (OHSMS) (Bibbings (2003). Hopkins (1999), in criticising the “safety pays” slogan often used in promoting health and safety initiatives, argues that not only has it failed to specify for whom safety pays, but has been unable to adequately establish the relationship between remuneration of top managers and health and safety performance, for which Smallman (2001) observes a lack of evidence.

The inability to establish the existence or nature of the relationship between top managers’ remuneration and safety performance affects the ability to establish for whom safety pays, and consequently weakens the business case (Smallman, 2001). Consequently, the “ethical case” for health and safety seems a preferable option, while the “Business Case” becomes a secondary and supporting argument. There is also a view that because of the noticeable short term financial burdens on the budget of organisations, health and safety promoters “*must continue to advance the ethical case for prevention and not allow supporting arguments such as the ‘Business Case’ to assume a wholly dominant position in campaigning and awareness raising activities*” (Bibbings, 2003, p. 5)

In spite of the differences in opinion on whether compliance is based on business case, moral or ethical grounds, there seems to be a consensus on the need for adequate health and safety management by organisations. For instance, the need to comply with health and safety legislation, the avoidance of bad publicity resulting from breach of health and safety laws, are but some of the major motivators for implementing health and safety management system. It has also been observed that a major incentive for better health and safety management by companies is the desire to forestall the importation of risks and liabilities to their own workforce and customers, from the activities of their suppliers/contractors (Rimington, 1998; Tamarelli, 1995).

In this regard, the protection of corporate image becomes a major driver, and companies make sure that the activities of their suppliers or contractors do not affect their image in any way. A practical example of this is contained in the following account of Zeneca's motivation for implementing a health and safety management system as follows:

“Zeneca therefore drives very hard to ensure that its bought in supplies met highest standards... Among other things, this involves auditing production suppliers to make sure that they are scrupulously well managed and that nothing they can do is likely to taint Zeneca's own reputation” (Rimington, 1998, p. 3).

2.6 Management of health and safety risks in organisations

One of the primary functions of safety management is the identification of hazards (Cox and Cox, 1996). Floyd and Footitt, (1999) argue that risk assessment subsequently becomes a centrepiece of the Management of Health and Safety at Work Regulations (MHSWR) 1992 in such a way that the control of risks is a major aspect of compliance with the requirements of HSW Act and the relevant statutory

provisions (Health and Safety Executive, 1997b). This is because organisational risk management is concerned with the eradication or minimisation of the adverse effects of the pure risks to which an organisation is exposed to (Bamber, 2003).

The purpose of risk management is to ensure a proper consideration of the impact of certain risks on the performance of the organisation, identification of alternative strategies for controlling these risks and their impact on the organisation, and a means to relate these alternative strategies to the general decision framework used by the organisation (Carter and Doherty, 1974).

Risks faced by an organisation could be from external sources (e.g. political risks, natural risks, social risks, as well as industry/market risk), internal sources (e.g. labour strike or production uncertainties such as machine breakdown), or from network related activities which result from the interaction between organisations within the supply chain, as well as due to insufficient interaction and communication (Juttner *et al.*, 2002).

An efficient risk management system helps organisations to identify and eliminate hazards and associated risks, and thus contributes to the increased efficiency and quality of production of these organisations. Accordingly, Cox and Tait (1998) note that risk management is used to explain the entire process of identifying, estimating, evaluating, reducing, as well as controlling risks. And in specific reference to supply chain risks, Norman and Jansson (2004) note that the probability of a risk occurring can be reduced through an improvement in the operational process of organisations,

both internally and in cooperation with suppliers. Manos (2001) went further to argue that in so doing, risk management contributes to a more competent, satisfied workforce and customers, and also enhances the company's image. Risk management involves the process shown in shown in Figure 2.6.1 (Source: Cox and Cox, 1996, p. 32) and discussed below.

Figure 2.6.1: Model of risk management (Source: Cox and Cox, 1996, p. 32)

1. Risk identification uses safety audits (Bamber, 2003), as a means of identifying the sources and components of a hazardous event, as well as the target(s) at risk (Cox and Tait, 1998).
2. Risk evaluation involves a judgement of the significance of the assessed, public perceptions of risks, and risk acceptability, etc (Cox and Tait, 1998). Some

schools of thought view risk evaluation as a subjective process, which is highly dependent on the assessor (Hale, 1986), as well as on the perception and knowledge of the hazard in question (Cox and Tait, 1998).

3. Risk control specifies risk control measures are aimed at avoiding or minimising the impact of risk to an organisation and the society. This process is preceded by the risk identification and evaluations stages of risk management (Bamber, 2003). This could be in the form of risk avoidance (Cox and Tait, 1998), risk retention, risk transfer (within this, an organisation may be held responsible for the cost of a particular loss suffered by another party), or risk reduction which relies on the implementation of loss control programme with the aim of protecting an organisation's assets from wastage caused by accidental loss (Bamber, 2003).

2.7 Summary of chapter

This has introduced health and safety management in organisations, along with its underlying principles. The discussion included an overview of accidents and their causes, as well as their costs to the society and individuals. Through these discussions, it was established that a reduction in the frequency and fatality of accidents and ill health at work can only be achieved through the development, adoption, and implementation of a health and safety management system. Furthermore, the restructuring of organisations with a view to maintaining or attaining competitive advantage, in the face of the changes in the global economy has strengthened the need to adapt the tools and methods of health, environment and safety to be in line with modern management practices.

The role of a health and safety management system in ensuring that risks inherent in the activities and relationships of organisations are identified through a robust risk management system was highlighted. It was further shown that a health and safety management system specifies remedial measures that must be put in place to protect organisations from the adverse effects of these risks. As a result the a current trend whereby businesses are increasingly seeking competitive advantage by operating through a range of quality-driven factors, such as employees' health and safety which normally affect product, price and performance also highlighted.

It has been established in this chapter that although health and safety standards in organisations (especially SMEs) are below acceptable standards (as shown in Chapter 1). The priority is thus to explore opportunities that would help in raising the standards to acceptable limits, using tried management principles. Chapter 3 has been dedicated to the discussion of supply chain management strategy, focusing on those aspects, features, and techniques capable of ensuring the achievement in an improvement in health and safety standards in organisations.

Chapter 3

Supply Chain Management Strategy

3.1 Introduction

The preceding part advanced the project by presenting an overview of health and safety management, its origin, and motivations. This chapter takes further the points established in Chapter 1 and Chapter 2, through a review of literature on supply chain management strategy and how it affects/facilitates inter firm relationships, and transfer of knowledge within organised networks. First, it establishes what a supply chain is, basing this on how previous authors have defined supply chain management. This is with a view to highlighting the contribution of partnerships, collaborations, and networking in supply chains to the overall efficiency and profitability of organisations.

A full discourse on supply chain management falls outside the remit of this study. Consequently, this study has concentrated on those aspects that deal with the way organisations relate and carry out their business functions, within a network of other organisations. Thus, greater emphasis is placed upon collaborations (alliances, partnerships) and how these facilitate information dissemination and knowledge acquisition, and performance improvement in organisations.

3.1.1 Supply chain management

Supply chain management has been described as an integrating philosophy to manage the total flow of a distribution channel from supplier to ultimate customer (Ellram and Cooper, 1990). A smooth flow of goods and services from suppliers to the ultimate

customer is achieved using supply chain management techniques by focusing attention on the interactions of channel members, which in turn facilitates the production of an end product or service that offers the best comparative value for the end user (Langley and Holcomb, 1992).

There is an observation that the definitions of supply chain management definitions can be classified either as management philosophy, the implementation of a management philosophy, or set of management processes (Mentzer *et al.*, 2001). This observation seem to have been influenced by the notion that supply chain management comprises of different kinds of dependencies within, between and across companies in marketing channels. Nonetheless, supply chain management, when viewed in terms of the flow of goods and services, entails a coordinated approach for the management of the flow of goods [and services] from suppliers to consumers, with an ultimate goal of satisfying customer service objectives, as well as minimising inventory and related costs (Carter *et al.*, 1995).

In as much as SCM is seen to ensure a better management of close inter-firm relationships, the development of successful supply chain relationships is however dependent upon a proper understanding of the nature of partnering (Mentzer *et al.*, 2000). Anecdotal evidences suggest that the success or otherwise of any member of the supply chain, undoubtedly, has a cascaded effect on the entire network, such that many organisations now embark SCM improvement as a way of balancing customers' demand and the need for a profitable growth (Chandra and Kumar, 2000). Subsequently, Ritchie (1990) considers the supply chain to be a single entity and

argues that the end performance of delivering satisfaction to customers will only be as good as the weakest link in the supply chain.

Further roles/influences of supply chain on business practices are highlighted in the report of a study carried out by the Confederation of British Industries (Confederation of British Industry, 1990), and authors like Stock (2000) argue that supply chain management could not be ignored as it offered financial and service benefits to organisations as well as customers. It is also becoming increasingly evident that the degree to which a company manages its supply chain relationship is a major determinant to its success as competitions are now between supply chains and not individual organisations (Christopher, 1998). Thus, both the competitiveness and profitability of an organisation are significantly influenced by the organisation's ability to manage its supply function (Handfield *et al.*, 1999).

Although supply chain management is branded as a panacea to many an inter-organisational problems, it is nonetheless questionable if supply chain management techniques could be applied with the same effectiveness to other industries or sector very easily. While supply chain management is often associated with, and treated from the manufacturing industry's perspective, the very nature of some other industry sectors makes it difficult to adopt supply chain management in its entirety. For instance, the highly fragmented and project oriented nature of the construction industry make it hard to establish long-term partnerships capable of bringing about the kind of reward and improvement obtainable in the manufacturing industry. A typical

construction supply chain network is shown in Figure 3.1.1 (Source: Beach, *et al.*, 2005, p. 612) below.

Figure 3.1.1: Construction supply chain (Source: Beach *et al.*, 2005, p. 612)

The degree to which this management philosophy is accepted in other industrial sectors varies. The one-off and short term nature of a majority of contracts in sectors such as the construction industry have been cited as a major hindrance to the sustenance of supply chain management concept in these sectors. The level of trust which exists among organisations is affected by the fragmented and project oriented nature of the construction industry; and this is clearly at odds with supply chain management which is based upon mutual trust that has been developed and sustained through long term collaborations (Beach, *et al.*, 2005). Johnston and Lawrence (1988) observe that supply chain management is not very popular in organisations that operate the market based type of relationship which are distrustful, antagonistic, and

deeply rooted in a constant anticipation of an opportunistic behaviour by the other party. Market relationships are those that concentrate mainly on the purchase of products at the lowest possible cost (Johnston and Lawrence, 1988). Consequently, these organisations keep each other at arms length, avoid any form of information exchange, and are less likely to share any accruing benefits with other parties. Again, the relationships amongst organisations, as evidenced in organisations in the construction industry and similar sectors, are characterised by defensive behaviour and adversarial relationships. These characteristics lead to significant costs being incurred while trying to define responsibilities aimed at minimizing risks and containing costs (Beach, *et al.*, 2005).

Although Quinn and Hilmer (1994) argue that outsourcing of products/services is a route to attainment of a significant competitive advantage over rivals, this practice has been criticised by some who argue that with time, suppliers become more powerful than their customers as they gain advantage of learning by doing, information asymmetry, economies of specialisation and economies of scale (Douma and Schreuder, 1998).

3.2 Supply chain network

Different views have been expressed about what a supply chain is. For instance, in Towill *et al.* (1992), a supply chain is described as a system incorporating material suppliers, production facilities, distribution services, and customers, that are all linked together through a forward flow of materials and a reverse flow of information. Another view is that a supply chain is a system which seeks to satisfy consumers through the provision of goods and services that satisfactorily meet the needs and

wants of the customer (Lambert, 1992). There are also observations that a supply chain is made up of actively managed channels of procurement and distribution involving a group of firms that adds value along the product flow from original raw materials to final customer (Cavinato, 1992).

Some definitions of supply chain networks are based on the relationship among the various parties involved. For instance, Aitken (1998) views a supply chain as a network of connected and interdependent organisations, mutually and co-operatively working together to control, manage and improve the flow of materials and information from suppliers to end users. On the other hand, a supply chain has been described by others as “value adding” tools used to provide products and services which meets the requirements of the customers (Stevens, 1989; Spekman *et al.*, 1998; Harland *et al.*, 1999).

Christopher (1998) further describes a supply chain as a network of organisations involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hands of the ultimate consumer. It is a management philosophy that integrates the different business activities of companies in marketing channels (Svensson, 2003). In effect, a supply chain is used to describe the type of relationship that exists among business organisation, such as between a purchasing organisation and its supplier(s). Therefore, a supply chain can be viewed as a set of approaches utilized to efficiently integrate suppliers and clients with a view to minimizing system wide costs, while satisfying service level requests. This ensures that correct quantity of merchandise is

produced and distributed to the correct locations, at the correct time and at the correct price.

3.3 Business relationships in supply chain networks

Recent research works on supply chain management has focused on the need to foster closer relationships between customers and their suppliers. Consequently, it has become important that organisations develop strong and sustainable partnerships, collaborations, or alliances if they were to gain a competitive advantage over their rivals. Relationships in supplier chains are not always cordial; there have been cases of adversarial relationships (Sako, 1992; Davis, 1993; Smith and Reinertsen, 1995). These authors (Sako, 1992; Davis, 1993; Smith and Reinertsen, 1995) also note that this attitude is changing, arguing that the desire by firms to benefit more from the competencies and resources held by their suppliers has caused more and more organisations to change from the earlier adversarial ‘arms-length’ type of relationships with their suppliers to a more collaborative type of relationship.

Furthermore, partnering not only adds value to an organisation’s activities, but also helps to improve its competitiveness through an effective sharing of information, skills and resources (Department of Trade and Industry, 2004). Partnering offers direct benefits to an entire supply chain and still remains the most significant method of improving the performance of organisations (Larson and Drexler, 1997).

Mentzer *et al.* (2000, p. 550) describe a partnership as an “inter organizational entity developed between two independent organizations in a vertical relationship within a

supply chain”. Although partnerships are voluntary collaborations between two or more organisations, Gunningham and Sinclair (2002) note that this enhanced when there is a jointly defined agenda focused on discrete, attainable and potentially measurable goals.

Figure 3.3.1 below, adapted from Mentzer *et al.*, (2000, p. 556), shows the various aspects of a partnership relationship between organisations.

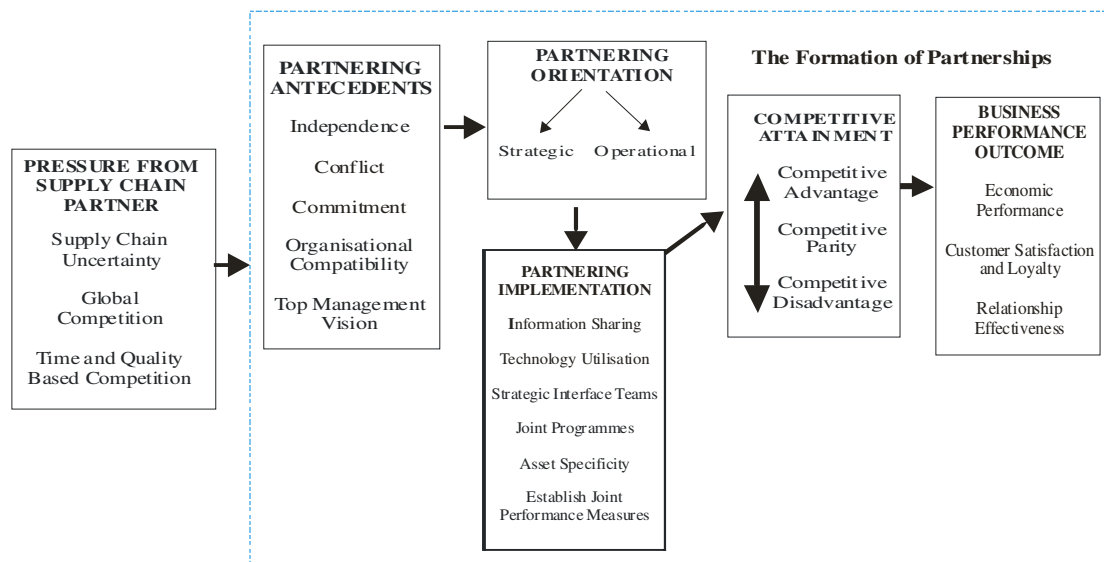


Figure 3.3.1: Different aspects of a typical partnership (adapted from Mentzer *et al.*, 2000)

A supply chain, being a major facilitator of change (Long and Arnold, 1995), represents a common way for firms to attain and maintain competitive advantage (Mohr and Spekman, 1994). Thus firms form vertical relationships (also known as linkages, alliances, value-added chains, collaborations) (Fearne, 1998), with a view to improving their performances. The term collaboration can also be used to describe

the relationship which may exist between two independent organisations, as well as the relationship between the different departments or sections of an organisation. A collaboration can either be a vertical collaboration (i.e. a collaboration with customers, internally across functions, and with suppliers), or a horizontal collaboration (referring to collaboration with competitors, and internally with non-competitors (Simatupang and Sridharan, 2002). These are shown in Figure 3.3.2 (Source: Barratt, 2004, p. 32) below.

Figure 3.3.2: Scope of vertical and horizontal collaboration (Source: Barratt, 2004, p. 32)

It was noted in Aquilon (1997) that the steady increase in fierce competition in some sectors of the economy (e.g. the automotive industry) demands an increase in productivity, core competence. Hence the need for collaboration among firms as a means of ensuring substantial cost savings (Lee *et al.*, 2000). This situation has necessitated the formation of partnerships, or purchasing alliances (Ellram and

Cooper, 1990) aimed at improving performance (on cost and quality) through effective information sharing (Aquilon, 1997). Several authors have written on factors that must be present if organisations were to benefit from partnership arrangements. For instance, Dwyer and Tanner (1999) observe that a partnership is built upon trust and mutual commitment, as a means of attaining commonly set goals. Stern *et al.* (1996) further observe that a partnership is a long-term business strategy made possible only through extensive social, economic, service and technical ties maintained over time. Morgan and Hunt (1994) believe that the level of communication and co-operation which exist between business partners, greatly influence the success of any partnership arrangement.

Effective communication is essential for successful collaborations (Monczka *et al.*, 1995), and involves “the formal as well as informal sharing of meaningful and timely information between firms” (Anderson and Narus, 1990, p. 44). The level of communication among business partners also has an impact on supply chain performance. For example in the face of the observations by some authors (e.g. Cook and Tyndall, 2001) that opportunities for improved supply chain performance were often unrealized, other authors are of the opinion that one likely cause of this is the lack of clear understanding by some stakeholders, of what is being done and why it is being done (Trent, 2004).

It is further argued that communication is an ongoing process of informing, listening to, and involving stakeholders, with the ultimate aim of motivating behaviour so much so that good communication skills is a prerequisite to becoming successful Hutchison

(2003). Furthermore, as observed by Hutchison (2003), communication is both strategic and leader driven and seeks to build an understanding among stakeholders about the vision and direction of the business. Effective communication has been credited with having an influence on the overall commitment and satisfaction of stakeholders in organisations. For instance the result of a survey on communication practice carried out by Mercer Human Resource Consulting showed that only 15 per cent of those employees who said their organisation does a good job of keeping workers informed were seriously considering leaving their organisation. On the other hand, over 40 per cent of those employees who said their organisation does not keep them informed, were considering leaving and 42 per cent said they were dissatisfied.

The high level of competition in the market are putting companies are under increased pressure to and promote new types of professional relationships, innovate, and adapt their technologies to the needs of consumers (OECD, 1992). As these relationships grow stronger, companies become even more interdependent (Aquilon, 1997). Thus, any investment in anyone supplier or supplier network aimed at improving its productivity also impacts on the productivity and reputation of the entire supply chain.

Furthermore, as the global economy becomes even more knowledge-intensive, the survival of organisations now depends on their ability to develop partnership and share information (on both operational and business improvements) with their business partner (Batenburg and Rutten, 2003). In the views of Lord Simon of Highbury:

sharing knowledge, sharing business improvements and sharing risks through what may be a formal or an informal networking approach, and also using the supply chain...using partnerships and partnering arrangements between companies...really can help provide the essential skills needed for the small and medium-sized enterprises to keep ahead of the game (Department of Trade and Industry, 1998).

There are suggestions in literature that closer cooperation between a company and its suppliers yield many benefits. It could lead to an access to complementary skills, economies of scale in joint research, risk sharing and access to knowledge located outside the boundaries of the firms, access to new technologies and markets (Powell, 1987; Clark and Fujimoto, 1991). Additionally, it leads to a substantial reduction in the development time due to the supplier's capabilities and know-how (Clark, 1989; Department of Trade and Industry, 2004), as well as noticeable improvements in quality, cost and development time of products and services (Ragatz, et. al., 1997). Other benefits of partnerships or collaborations between organisations which are identified in Department of Trade and Industry (2004) include an increased achievement of best practice and quality standards by organisations, an increase in flexibility, an improved cash flow due to a reduction in stock and administration costs, as well as a boost to capacity with a subsequent reduction in production down-time. It is worth noting that contrary to suggestions that partnerships affect the supplier's rate of sales growth, it leads to better stock and client management costs (Kalwani and Narayandas, 1995).

These identified benefits notwithstanding, some authors have argued that there are some obvious disadvantages of partnerships and collaborations in supply chains. For instance, research by Littler *et al.* (1995) reveals that some firms thought that

collaboration with suppliers made product development more costly, more complicated, more time consuming, less efficient, and more difficult to manage and control. There is also a school of thought which believes that product development time is considerably raised (affected negatively) when suppliers are involved (see for example, Einzenhardt and Tabrizi, 1995). Others contend that stronger relationships among organisations and a corresponding reduction in the number of strategic suppliers could easily translate into a higher level of risk importation in supply chains (Gadde and Snehota 2000). Thus, the establishment of adequate controls aimed at controlling and minimising the effects of these imported risks and ensuring that they do not threaten the operations of the organisation has become a good management practice (Dalling, 2000).

These identified shortcomings of collaborative relationship with suppliers can however be minimised by studying and understanding those factors that are critical to the sustenance of any supply chain relationship. Ragatz *et al.* (1997) feel that supplier involvement in project activities by its customers, shared education and training, cross-functional and direct inter-company communication are determinants to the success of supply chain relationships. Similarly, the quality of information exchange, participation of the supply chain members, level of coordination, commitment, trust, as well as an effective conflict resolution techniques have all been identified as being essential to the success of collaborations and partnerships in supply chains (Mohr and Spekman, 1994).

The above reservations notwithstanding, it is worthy to note that the partnership type of relationship does not threaten the continued existence of the parties involved in it. Subsequently, (Boddy *et al.*, 2000), describes partnering as an approach to inter-firm business relationships in which companies develop practices that encourage co-operative rather than adversarial behaviour. Thus organisations that work in partnership benefit from all or one of the following motives for alliance formation: fulfilling the need for specific capabilities; minimization of cost; greater speed to market; as well a balanced spread of the financial risk (Faulkner, 1995). There are authors who hold counter views, arguing that weaker players can lose as much in ostensibly co-operative relationships as in adversarial ones (Turnbull *et al.*, 1992). This group of authors also believe that competitive advantage is more likely to come from securing direct control over strategic resources than from collaborative relationships with other suppliers (Cox, 1998)

It should be noted that a move towards partnering is dependent upon the intending partners working in a co-operative way (Boddy *et al.*, 2000). However, this relationship according to Coopey *et al.* (1998) is subject to certain structural constraints such as resource allocation and rules, procedures and norms that regulate resource use. In Boddy *et al.* (1998), a significant statistical relationship was found to exist between the provision of adequate resources and the outcome of partnering attempts. Again, supply chain partnering is dependent upon the realignment of the culture of the parties in a way that can make them capable of carrying out the partnering strategy (Hardy, 1996). Thus the objectives for establishing a partnership could be achieved by a realignment of the four interacting elements of an organisation - tasks (objective), technology, people, structure (Leavitt *et al.*, 1965). While it

cannot be argued that carrying out structural changes in organisations is a significant step towards improving performance, there are views however, that this alone cannot bring about the needed improvement (Smith, 2002; Le Grand *et al.*, 1998; Shortell *et al.*, 1998). Subsequently, authors like Scott *et al.* (2003a) observe that there are calls for a programme of cultural transformation to be implemented alongside these structural changes, if the desired level of improvements in performance were to be realised.

3.3.1 Types of business partnerships

There are different forms of partnering are evident in business relationships; these are the long-term (strategic) and short term (project) (Barlow and Jashapara, 1998). Barlow and Jashapara further note that long term or strategic partnerships span across so many projects and intended to bring about gains to the parties over the significantly long periods of time that it is in place, and the short-term (project) which only lasts for the duration a specific project and focusing only on short term benefits.

It has also been argued by authors such as Bresnen and Marshall (2000) that project partnering is based upon limited co-operative relationships, aimed at realising short-term project related benefits and so, less likely to be transformed into an advanced form of co-ordination of substantive learning. Although there is a doubt on the extent to which this type of partnering could be used in an industry such as the construction industry that is noted for its heavy reliance on repeat business (Bresnen and Marshall, 2000), project partnering is nonetheless regarded as playing a potentially pivotal role

in promoting closer relationships in the construction industry (Mathews *et al.*, 1996; Li *et al.*, 2001).

Clients develop partnerships only with some members of their supply chain due to the costs involved in implementing it (Mentzer *et al.*, 2000). Although different forms of partnerships have been identified in existing literature, Ellram and Cooper (1990) however observe that no particular form of partnership could be applied with the same degree of success to every situation. Mentzer *et al.* (2000) have suggested that partnering relationships between organisations could either be strategic (which leads to competitive advantage) or operational (which leads to competitive parity). By implication, in trying to either gain a competitive advantage over its rivals or to match their standards, organisations invariably embark on activities which bring about higher efficiency, effectiveness and value added services. These, consequently bring about higher levels of customer satisfaction and better relationship.

3.3.2 Strategic partnerships

This is an on-going, long-term relationship between different organisations brought about by a desire for the achievement of strategic goals with an increased profit by the partners, as well as providing them with the capability to deliver added value to their customers, thus dramatically changing an organisation's competitive position (Hitt *et al.*, 1999). Johnson (1999) believes that organisations enter into a strategic type of partnership because of one or more of the following reasons:

- it is a long-term business strategy which is dependent upon maintaining a good, and amicable relationship with its partners

- the relationship with its partner is important
- a strong cooperative relationship with its partners would greatly enhance its competitiveness in the industry

Mentzer *et al.* (2000) further observe that this form of partnership could only succeed if the partners in the relationship were achieving both short-term operational advantages as well as long-term strategic goals. The success of any partnership is also dependent on whether the characteristics so developed by the supply chain in question could be easily copied by other organisations (Lambert *et al.*, 1996). In other words, this implies exclusivity of the characteristics in question.

3.3.3 Operational partnerships

An operational partnership is one based upon operational considerations where the main objective is to improve an organisation's capabilities in delivering specific outcomes (efficiency), thus delivering products and services in a manner that is acceptable to the end user (effectiveness) (Stern *et al.*, 1996). Mentzer (1999) went further to suggest that while the effectiveness of a partnership is measured by the service quality and service needs of the focal firm and its customers, its efficiency is measured by the time it takes to deliver a product/service, the quality of products and services offered, as well as the number of stock kept. However, to be able to achieve the above, Bowersox and Closs (1996) argue that operational objectives of the partnership must be drawn up. These objectives must specify key performance indicators such as delivery speed and consistency, flexibility in handling customers' requests, as well as the ability to recover from malfunctions, among others.

3.3.4 Differences between strategic and operational types of partnerships

Notable differences between strategic and operational types of partnering had been identified in previous studies. For example, decisions in operational partnerships while utilize fewer organisational resources, are easier to implement and reverse than strategic decisions (Hitt *et al.*, 1999). In contrast to strategic partnering, decisions made in operational partnering have shorter time spans (Ganesan, 1994).

Furthermore, the tendency for a partner organisation in strategic partnering to see itself as an extension of the other organisation does not happen in operational partnering (Mentzer *et al.*, 2000). A close analysis of the degree of exclusivity as suggested by Lambert *et al.* (1996), further reveals another major difference between these two types of partnering. For instance, the fact that operational partnering aims at establishing a competitive parity (Mentzer *et al.*, 2000) with other organisations, makes operational activities more likely to be copied or matched by competitors than strategic activities (Grimm and Smith, 1997).

A further distinction has been made between operational and strategic business relationship on one hand and transactional form of business relationship on the other. For example, Frazier *et al.* (1988) observe that transactional relationship between organisations are treated on a purchase-by-purchase basis, without the coordination involved in either the strategic or operational partnering. Invariably, this contrasts with operational type of business relationship whereby a partner is regarded as a close associate, whose input is needed in order to improve the efficiency and effectiveness of the supply chain. It also differs with the strategic partnering whereby the

perception of an organisation as an extension of the other leads to long-term strategic initiatives being undertaken.

Construction Industry Institute (CII, 1991) notes that the main aim of a strategic partnering seems to be the maximisation of the resources of the parties involved such that would make the attainment of specific business objectives possible. Project partnering on the other hand is used as a means of transforming contractual relationships into a cohesive project team having common set of goals as well as procedures for resolving disputes in a timely and effective manner (Cowan, 1991).

3.4 Supplier associations

A supplier association is a term used by Peter Hines to describe an association suppliers mutually joined by a common agenda. It is believed to have started in the late 1930s in Japan originally as *kyoryoku kai* or cooperative circle (Hines, 1994). It is defined in Hines (1994, p. 143) as:

“a mutually benefiting group of a company’s most important subcontractors, brought together on a regular basis for the purpose of co-ordination and co-operation as well as to assist all the members to benefit from the type of development associated with large Japanese assemblers: such as kaizen, just in time, kanban, U-cell production and the achievement of zero defects.”

The aims and objectives of supplier associations include improving the abilities and skills of suppliers, facilitating the flow of information, increasing trust between organisations thus allowing for closer business relationships, helping smaller suppliers who may be lacking specialist trainers, and providing an example to subcontractors on how to coordinate and develop their own suppliers (Hines, 1994, p. 144). A typical

supplier association is shown in Figure 3.4.1 (adapted from Hines, 1994, p. 172)

below:

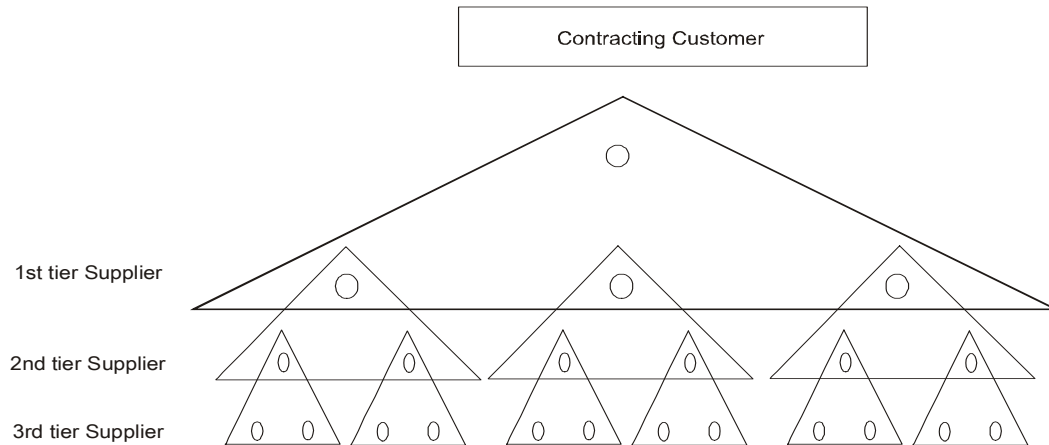


Figure 3.4.1: Supplier association (adapted from Hines, 1994, p. 172)

Smitka (1991) observes that supplier associations contribute to the efficiency of the subcontracting system and maintenance of trust, and this enable firms to extend their requirements [and capabilities] across firm boundaries. Smitka (1991) notes that supplier associations thus become an organizational nexus for jointly coordinating the entire subcontracting system, serving as a forum for discussing corporate strategy and co-ordinating investment; all of which requires not only adaptation among firms, but also the sharing of detailed business strategy, engineering and cost information. Commenting on the impact of supplier associations on organisational performance, Rich and Hines (1997) observe that supplier association was influential in the development of high performance from the Japanese supply chains and contributed to the international competitiveness of many Japanese companies.

The success of supplier associations in bringing about improvement in the performance of organisations depends to a large extent on regular meeting of the partners. Although this seems to be an unproductive strategy, it however acts as an integrating mechanism and ensures that a direct person-to-person contact exists, through the provision of an open channel of communication both at work and in social encounters (Hines and Rich, 1998).

Different models of supplier associations exist and some of these (for example structural, efficiency, value stream, and extended value stream models) have been discussed in earlier works on supplier associations. However, for the purposes of this work, two models are be discussed briefly here. A detailed discussion of these models could be found in Hines and Rich (1998).

3.4.1 Structural model

The structural model of supplier association is one whereby a customer company sets up a basic arrangement between itself and a group of key suppliers with an aim to improving the performance of the supply base. It is done in some cases with help from an outside facilitator. A typical structural model is given in Figure 3.4.2 (Source: Hines and Rich, 1998, p. 534) below:

Figure 3.4.2: Basic structure of supplier association (Source: Hines and Rich, 1998, p. 534)

3.4.2 Efficiency model

The efficiency model of supplier association which is similar to the structural model discussed above, and developed to help earlier supplier associations develop further, is a convenient starting point for new associations (Hines and Rich, 1998). It however, differs from the structural model because participating firms are provided with a route path to world class performance, which is often done using an outside facilitation to bring about learning and implementation of various operational techniques and methods (Hines and Rich, 1998).

Notable problems of the structural and efficiency models of supplier association include the passive role played by some suppliers, limited availability of resources available to suppliers, as well as the inherent difficulties in transferring the relational and educational improvements to operational enhancement among others (Aitken, 1996; Izushi and Morgan, 1998). Although Izushi and Morgan (1998) agree that there are problems associated with the efficiency model, Hines and Rich (1998) however argue that the efficiency model was able to solve some of the problems that were

peculiar to the structural model of supplier associations. According to Izushi and Morgan (1998), these problems associated with the efficiency model could be overcome through the provision of additional one-to-one assistance to member suppliers, the establishment of an effective leadership and transparency culture by the customer, the use of expertise possessed by member suppliers, the setting of measurable goals and carrying out regular check-ups, as well as the selection of members conducive to collaboration.

Leadership plays a vital role in any organisational activity and inadequate or inappropriate leadership is recognised as a major contributor to failure of achieve intended outcomes in many initiatives undertaken by organisations (Schien, 1985).

Consequently Scott *et al.*, (2003b; pg. 115) note that:

“two main styles of leadership are widely recognised: ‘transactional’ leadership, based around securing organizational compliance and control by using material motivational factors such as reward systems; and ‘transformational’ leadership processes, which inspire cognitive change by redefining the meaning of information to which organizational members (but not necessarily sensitized).”

Hines and Rich (1998) also note that the duplication of suppliers associations from one network to another is beset with difficulties similar to those encountered in adopting the Japanese concept of supplier associations in the UK and some other industrialised western countries. Hines and Rich (1998) further observes that this effort has been affected by factors such as a lack of understanding of the concept behind the formation of supplier association; a natural urge to resist changing from the age-long arms-length buyer-supplier relationships; lack of cross-functional involvement from the buying (and supplier) companies, as well as a lack of

motivation among suppliers to increase their ability to develop new methods. Other factors, continued Hines and Rich (1998), include a tendency for suppliers to reject large commitments and too much dependency on one customer; inability to adapt the original Japanese approaches to suit the needs of organisations; unrealistic expectations as well as a short term focus, especially during the early stages of implementation, such that investments in supplier association involving primarily medium and long term gain are neglected; an inability to review the success or otherwise of the implementation programme; a failure to explain the requirements of the customer to the suppliers or of the suppliers to the customer; and a lack of trust among suppliers as to the motives of the customer organisation. A careful examination of these factors reveals that communication, acceptance or buy-in, motivation, commitment, inability to adapt, unrealistic expectations, short term focus, absence of an evaluation procedure, lack of trust are prominent.

3.5 Critical success elements of partnerships

The preceding sections have discussed the various aspect of partnership arrangement between organisations, highlighting what partnerships are as well as their merits and merits. However, some factors are critical to the realisation of the aims and objectives of establishing a partnership. The level of commitment to health and safety improvement, the ability to agree and sustain continuous improvement, the assessment of performance based on established measures, standards and objectives, as well as the identification and rectification of weaknesses and problems are more or less dependent on these critical success factors.

The extent to which an individual or group has been given authority or power to make critical decisions affects the level of performance. For instance, Kirkman *et al.* (2004) conclude from their research that a positive relationship existed between empowerment and team performance. Team empowerment which is defined here as the increased task motivation arising from team members' collective, positive assessments of their organisational tasks (Kirkman and Rosen, 2000) can be experienced in different proportions.

As observed by Kirkman and Rosen (1997), it could be in the form of a collective belief by team members that they can be effective (potency), or in the extent to which team members intrinsically care about their tasks (meaningfulness). Other ways include the degree to which team members believe they have the freedom to make decisions (autonomy), as well as the impact or the extent to which team members feel that their tasks make significant organizational contributions.

Empowerment has been linked to the desire to continuously improve on existing practices. For instance, Kirkman and Rosen (1997) argue that if a team has information of the effect of its work on others/teams, it is more likely to have the information necessary to make accurate adjustments in its work. The process of brainstorming to find ways of making adjustments to work processes enhances learning by improving team members' collective understanding of a situation and revealing unexpected consequences of previous actions (Edmondson, 1999), thus proactively seeking continuous performance (Crant, 2000).

Although it is recognised that all these dimensions would not be collectively present, it is believed that even in these circumstances, it is still possible that teams experience a level of empowerment, as these dimensions combine additively to create an overall construct, so much so that even though a team may have little autonomy, members can still experience team empowerment to the extent that they feel a collective sense of potency, a high level of meaningfulness in the work, and a sense that the team's work has impact on stakeholders (Spreitzer, 1995).

Some authors have established a link between the degree of empowerment existing in an environment and the level of commitment. As an example, Liden *et al.* (2000) note that empowerment is positively associated with organisational commitment. Apart from re-iterating that commitment is a critical success factor in any improvement initiative, it would not be discussed further in this section as it has already been discussed in the section that discussed creation of acceptance or “buy-in.”

It is also important that weaknesses or problems are identified in the chain as quickly as possible. These could be existing weaknesses or problems in health and safety of the organisation(s) or weaknesses or problems that could potentially arise from the planned improvement. Bearing in mind that there is always another level of perfection, a consensus should be reached on the continuous and cyclical nature of the actions. Thereafter, performance should be measured against already set standards and objectives so as to assess effectiveness as well as efficiency.

Another major determinant to the success of supply chain partnerships and collaborations is the type of relationship that exists among the various stakeholders. Arguments by authors such as Handfield *et al.* (2000) and Scannell *et al.* (2000) that inter-firm relationships were critical not only to the successful coordination of supply chains, but also to the improvements in the performance of suppliers' production capabilities, have extended the views expressed by other authors like Lamming (1993) that managed supply chain relationships often help in the attainment of performance and superior competitive advantage that are not readily generated by open market transactions.

Initially, relationships in supply chains were classified either as arms-length contractual relations (ACR) or as obligational contractual relations (OCR) (Sako (1992). Morrissey and Pittaway (2006) believe that the nature of the relationships between a firm and its customers and suppliers has an important business implication for all firms, irrespective of size. They note that in an adversarial type of relationship between buyers and suppliers, relationships were short-lived and price was the primary concern. This is not surprising as it has been noted earlier by Saunders (1997) that negotiations in this type of relationship were often confrontational and very much underpinned by a win-lose philosophy, carried out in an atmosphere where power was used (or abused) for maximum organizational gain and a distinct lack of trust between trading parties.

Power, when exercised rightly can bring about the desired improvements needed. For instance, Handfield and Nichols (1999) while observing that a supply chain

relationship could either be established on a culture of collaboration or compliance, also point out that while a climate of trust provides a basis for achieving collaboration, the exercise of customer's rights enshrined in the purchasing agreement serve as a mechanism for achieving compliance. Although both arms-length and trust-based types of relationships impose the same requirements on product and services efficiency in areas such as cost, quality and delivery, Liker and Wu (2000) believe that sustainable improvements in a suppliers' performance is more in a collaborative approach which is largely based on trust. Klassen and Vachon (2003) further attest to the positive correlation between performance improvement and collaborative type of relationship based on trust among suppliers and their customers.

Trust, which is defined here as "the firm's belief that another company will perform actions that will result in positive actions for the firm, as well as not take unexpected actions that would result in negative outcomes for the firm" (Anderson and Narus, 1990, p. 45) can, according to Sako (1992), be an expectation that promises would be kept (contractual trust), a confidence in the ability of a trading partner to carry out a specific task (competence trust), or the feeling that a trading partner is morally committed to maintaining a trading relationship (goodwill trust). However, the author of this work agrees with the view expressed by Sako (1992) that among these types of trust, it is the goodwill trust that is crucial to the formation of a true partnership.

The willingness or commitment by trading partners to exert effort on behalf of the relationship is indicative of an attempt by a firm to build a relationship that is sustainable in the face of unanticipated problems (Gundlach *et al.*, 1995). This, argue Anderson and Weitz (1992), also suggests a willingness by the parties to invest in

transaction-specific assets, thus demonstrating that they can be relied upon to perform essential functions in the future (or competence trust according Sako, 1992).

The implication of these is that both collaboration and trust create an atmosphere for mutual risk sharing and respect for the one's business partner (McIvor and McHugh, 2000); it ensures a mutual type of relationship where the interests of the other party are equally important in any decision making process. While in the views of Ellram and Edis (1996), mutuality of interest remains an important cultural element of any supply chain collaboration, Ireland and Bruce (2000) argue that there cannot be a case of an innate desire to win at all cost. Mutuality of interest can be achieved for instance, through a company-wide education campaign to fully ensure that their staff fully consider and communicate with suppliers and other stakeholders on issues of mutual importance (BSR Education Fund, 2001).

Another critical aspect of supply chain relationships with respect to collaborations is the creation of a forum for discussion. One way of doing this is by scheduling supplier meetings which are increasingly been used by organisations as tools for addressing performance issues. For instance, Lippmann (2002) notes that many companies view supplier meetings as an effective tool for addressing environmental issues with suppliers. These companies have structured these meetings in a number of ways, ranging from one-on-one meetings with suppliers, to environmental summits with as many as 100 key suppliers. The frequency of these meetings varies. For instance, some are held as one-time events, others annually, and some companies such as Ford Motor Company and General Motors have created supplier environmental

advisory teams that meet on an ongoing basis to work on collaborative projects. Lippmann (2002) further observes that these meetings are useful for communicating expectations and sharing information and companies have generally found that the most effective supplier meetings are collaborative and provide opportunities for the buyer and supplier to engage in joint problem solving to meet environmental and business goals.

3.6 Outsourcing as a supply chain management strategy

Outsourcing has already been defined in Section 1.1.2 as the act of transferring some of an organization's recurring internal activities and decision right to outside providers, as set forth in a contract (Greaver, 1999). Efling and Baven (1994) further defined outsourcing as a contractual agreement between a customer and one or more suppliers to provide services or processes that the customer is currently producing internally. Many reasons have been suggested as to why organisations outsource some of their activities. For example it has been observed that outsourcing is usually used by organisations wishing to concentrate on their core competencies (Prahalad and Hamel, 1994; Quinn and Hilmer, 1994). Also, Quinn (1999) notes that increased technical complexity has made it increasingly difficult for a company to stay at the cutting edge in several areas at the same time. Consequently, outsourcing, which has been linked to business strategies aimed at enhancing specialisation is increasingly being used by organisations as a means of focusing on their core competencies (Gadde and Snehota, 2000).

The decision by an organisation to outsource any/part of its operations is influenced not only by the likelihood that the planned action would help the organisation to attain

a competitive advantage, but also by other factors such as the degree of strategic vulnerability associated with the outsourcing, and the level of control needed to reduce vulnerability (Quinn and Hilmer, 1994). These factors are nonetheless interwoven because the level of control exercised in an outsourced environment depends on how susceptible an organisation feels it has become, or the potential for an increased competitive advantage over its competitors as a result of the decision to outsource a service (Quinn and Hilmer, 1994). For instance, while a low degree of strategic vulnerability with a low potential for competitive advantage requires a low level of control, a high degree of strategic vulnerability and a high potential for competitive advantage, demands an exercise of strategic control. Figure 3.6.1 (Source: Quinn and Hilmer, 1994, p. 48) below shows the major factors that influence outsourcing decisions.

High

Figure 3.6.1: Factors that influence outsourcing decisions by organisations (Source: Quinn and Hilmer, 1994, p. 48).

The exercise of control is fundamental to supply chain management, and this usually resides with the organisation conducting the last significant transformation of the product before it reaches the consumer. For example, this is often the OEM manufacturer in the manufacturing sector or the organisation which is in direct contact with the consumer in service industry (Lamming, 1996).

The role of the supplier to the continued success and viability of businesses has become more obvious with the increased number of outsourced processes by companies. This has in turn increased the pressure on these suppliers to deliver quickly and on time (Hertz *et al.*, 2001) at minimal cost, and with fewer disruptions to production. Consequently, companies have moved from simply focusing on improvement activities within their own sites to extending these to the entire supply chain as a way of sustaining competitive advantage.

Further evidence of the impact of suppliers/contractors on their buying/contracting customers abounds. Lo and Yeung (2004) note that companies spend more than half of their annual sales turnover in purchasing materials, components and services from suppliers. Thus, the performance of these suppliers have effectual impacts on product quality, production costs, time of delivery, etc of their buying or contracting customers. There are also views that organizational competitiveness and profitability are significantly influenced by how efficient the organisation's supply function is managed (Weber *et al.*, 1991). The practice by organisations, especially within the manufacturing sector, to outsource their non-core products/services in a bid to achieving competitive advantage (Quinn and Hilmer, 1994) has been criticised. This

criticism is hinged on the belief that with time, suppliers will become more powerful than their contracting/buying firm as they gain advantage of learning by doing, information asymmetry, economies of specialisation and economies of scale (Douma and Schreuder (1998). It is possible that these criticisms may influence outsourcing decisions by companies, such that rather than outsource their products/services, companies may increasingly seek to extend their operational control over their suppliers and business customers through acquisitions.

Another criticism is that in organisations where outsourcing has been embraced as a tool for attaining efficiency in operations, the issue of risk handling and risk sharing along the supply chain has become pronounced (Norrman and Jansson, 2004). There is also a view that as organisations become leaner, and supply chains become more integrated, the more likely that uncertainties, dynamics, and accidents in one link would impact on other links in the chain (Svensson, 2000); Christopher *et al.*, 2002). Souter (2000) believes that it is in an organisation's interest not to focus on its own risk alone, but on risks in the other links in the supply chain. Wolfson (1994) argues that to curtail the threats posed by these risks, organisations should use both theoretical and conceptual [evaluation and improvement] frameworks which define roles, responsibilities, as well as targets.

The success or otherwise of an organisation is dependent upon its ability to adapt its business strategy to suit the prevailing competitive environment (Porter, 1980). As a result, the ability of an organisation to compete depends on the resources that it has brought to bear on a value added task (Carr and Pearson, 1999). Miller and Shamsie

(1996) note that these resources at the disposal of an organisation that enable it to compete effectively could be one or a combination of property based resources which include long-term contracts, valuable technology, or exclusive distribution network, and/or knowledge based resources which include technical and creative skills, as well as collaborative efforts between functions or firms

3.7 Effect of partnering on knowledge acquisition and competitiveness

Knowledge is a recognised source of competitive advantage (Nonaka *et al.*, 1996) and its acquisition and development have become a major determinant to the successful implementation business strategies by organisations (Doz, 1996). Davenport and Prusak (1998, p. 5) observe that:

"Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms."

In his analysis of the above definition, Nickols (2000a) distinguishes between knowledge which is reflected in a person's state as well as in that person's capacity for action, and knowledge that has been articulated and frequently recorded. These views clearly reflect Polanyi's (1967) distinction between tacit and explicit knowledge. A knowledge is tacit if it cannot be articulated Nickols (2000a). Hence, it is viewed as rooted in individual experience and involves personal belief, perspectives and values (Polanyi, 1967).

Tacit knowledge is also described as consisting of range of conceptual and sensory information and images that can be brought to bear in an attempt to make sense of something (Hodgkin, 1991). Knowledge becomes implicit if can be articulated but has not. The existence of this type of knowledge is implied by or inferred from observable behaviour or performance (Nickols, 2000a). Explicit knowledge on the other hand is knowledge that has been articulated and in most cases captured in the form of texts, tables, diagrams, product specifications, documented best practices, formalised standards, etc. Thus, explicit knowledge can also be described as formal and systematic knowledge (Nonaka, 1991) and is dependent on norms, attitudes, flow of information, and ways of making decisions that shape how people deal with one another. The relationship among these types of knowledge is shown in Figure 3.7.1 (adapted from Nickols, 2000a) below.

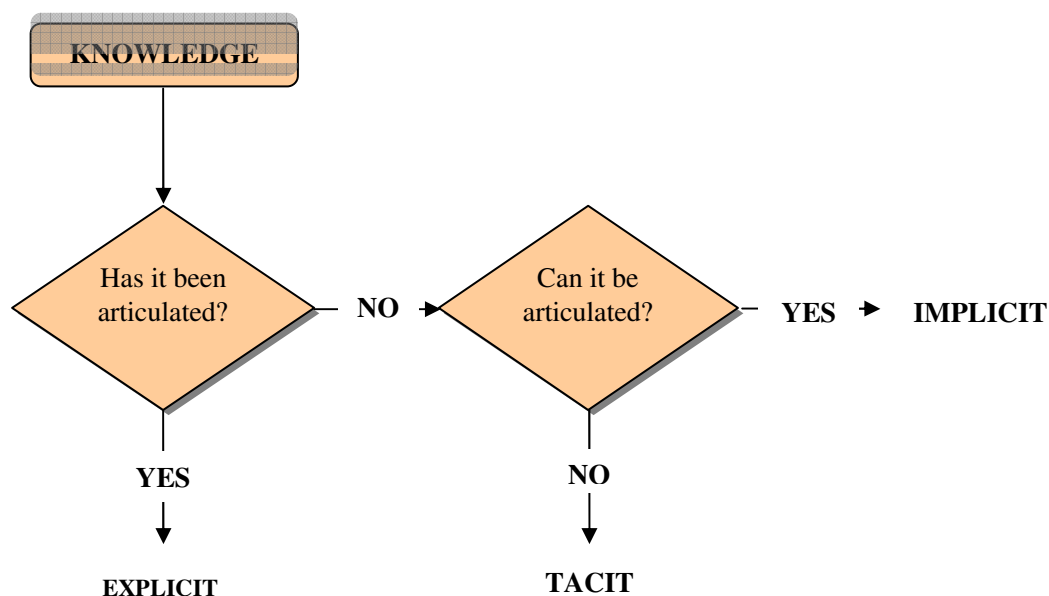


Figure 3.7.1: Explicit, implicit and tacit knowledge (adapted from Nickols, 2000a)

The implication of the above distinction between tacit, implicit and explicit knowledge is that the culture of an organisation could be directly shaped and influenced through the acquisition of knowledge within a network of organisations. It could be inferred that explicit knowledge contributes more to performance improvement in organisations than tacit knowledge, because learning can only help in improving the performance of an organisation if it is captured, organised, disseminated, and used (Wagner, 2003). A study by Boddy *et al.* (1998) demonstrated that learning is stimulated by partnering and this has brought about tangible business benefits such as reduced cost or operation, and an enhanced efficiency to companies. Learning in supply chains is enhanced when a leading partner acts as a coordinator; this ensures that a process of learning occurs throughout the chain (Gereffi (1995). This facilitation or coordination is not always easy because of obvious difficulties in setting up an appropriate and balanced system that promotes the development and implementation of knowledge sharing especially in a supply chain made up of discrete and independent entities having different cultures (Lehaney, 1999).

Learning, especially in partnership arrangements, could involve learning about one's partner, where most of the information is tacit; learning about tasks, which should be predicated upon setting up clear objectives and goals expected of the partners; and learning about the outcome of such relationships (Doz, 1996). Thus, central to the success of learning (or transfer of knowledge) in supply chain networks is the formation of inter-organisational teams consisting of members from the customer as well as supplier companies (Chen, 1999). The existence of these teams facilitates the

amalgamation of the skills from the separate organisations into a new strategically significant capability (Monczka and Trent, 1993).

Grant (1991) observes the impact of knowledge on the creation and sustenance of competitive advantage and profitability of an organisation. This view is further highlighted in the work of Black and Boal (1994) who advocated for an examination of the ways to sustain acquired knowledge with the passage of time. Accordingly, because learning depends on conditions which encourage shared norms and values (Wagner, 2003), it is essential that a narrow gap in knowledge among the partners should be maintained. Dodgson (1991) argues that a successful learning partnership is usually built upon a base which ensures that a minimal gap is maintained between the partners as too wide a gap makes learning almost impossible. However, learning in network is hindered by factors such as lack of clear objectives, inadequate amount or quality of feedback, as well as limitation of the boundary spanning activities of members.

There are many reasons why a contracting/buying organisation may enter into a co-operative arrangement with its suppliers/contractors. For instance, it has been suggested that a major objective of co-operation between a customer and its suppliers is the creation of internal knowledge (Richter and Vettel, 1995). Barney (1999) further argues that generation of knowledge is the key that enables organisations to change and expand its boundaries. In addition to increasing knowledge acquisition by organisations, supply chain partnering also have an impact on competitiveness. For instance, Svensson (2003) argues that supply chain management as an influential

ingredient in the field of logistics can enhance an organisation's competitive advantage. This is because "improvements in supply chain performance typically provide a longer-term advantage than other forms of competition" (Taylor *et al.*, 2001, p. 6). Fynes *et al.* (2004) observe that while there is a considerable body of work on the interaction between the various dimensions, such as trust, commitment, adaptation, communication and collaboration, of supply chain relationship, very few authors have written on the impact of supply chain relationships on the performance of organisations.

3.8 Overview of supply chain health and safety management

A change in the business practices has caused a move to the contracting out of non-core processes and operations to outside suppliers or contractors. As a result, the potential to import problems (such as injuries, ill-health, and property loss) alongside the intended service or product remains high. Thus, it has become a common practice to have an adequate management system with controls put in place so that procured services or product do not threaten the organisation (Dalling, 2000).

Nonetheless, although the effect of workplace injuries and ill health on the well being of workers and the competitiveness of organisations is well established, there are, however, difficulties experienced in promoting the benefits of good health and safety management practices to hard to reach and vulnerable organisations such as small and medium-sized enterprises. Irrespective of the fact that the supply chain pressure has been described as having the potential to influence how members of the chain carried out their business activities, not much has been done on its potential to influence SME suppliers into looking at ways to improve on their safety standards.

In a review of occupational health in the supply chain, White and Benjamin (2003) observe that although there is evidence of the availability of information and initiatives pertaining to health and good safety practices in organisations, these information and initiatives have not necessarily been specific to supply chains. White and Benjamin (2003) are of the opinion that any health and safety problems in the supply chain could be as a result of any of the following: suppliers' or contractors' related issues, issues relating to the contracting company, issues relating to the supply of goods.

On the suppliers side, factors such as economic reward pressures, inadequate regulation, the inability of sub-suppliers to join together in order to improve their situation and lack of organisation are some of the reasons which influence workplace health and safety standards (Mayhew and Quinlan, 1997). Furthermore, the pressure on suppliers to work speedily and at a minimal cost brings about a neglect of workplace health and safety. This makes the implementation of an effective health and safety policy by these supplier organisations as well as the imposition of strict health and safety controls on them by the contracting/buying organizations almost impossible (Hope, 1999).

Some other authors have gone further to highlight the impact of organisational changes on health and safety in supply chains. For instance, White and Benjamin (2003) believe that the occurrence of health and safety problems in the supply chain cannot be seen as simply arising from specific factors but instead from overall industrial employment relations between members of the supply chain. It has also

been advised while assessing health and safety outcomes, it is important to consider the integrity of the internal industrial relations instead of concluding that the accident was a result of an inadequate enforcement or the non-availability of the correct equipment (Rousseau and Libuser, 1997).

Hope (1999) argues that there was a positive association between the use of contractors/suppliers in supply chains and higher accident rates, with contractors accounting for over 22% of fatal injuries. The higher incident rate accounted for by contractors could be partly attributed to the difficulty in determining who is responsible for health and safety matters (Hope, 1999). This is as a result of lack of co-ordination between the companies which leads to poor communication. In view of this, White and Benjamin (2003) wrote “...it is important that organisations within supply chains work together in order to avoid aggravating a possibly already poor health and safety record.” (p.15)

The maintenance of good health and safety at work standard is an explicit requirement of most national laws (Health and Safety Executive, 1997b). Although some most of the regulations refer directly to health and safety management in individual organisations, some of these regulations are nonetheless specific to supply chain networks (or to specific parts of the supply chain or processes involved). However, in most cases, these regulatory requirements apply to all employees irrespective of whether they are employed directly by a company, or working on a job which has been contracted out. Hence the view that health and safety legislation has a power to

impose duties on all companies and persons, whose activities may impact on safety in the workplace (Crabtree and Risstrom, 1998).

The duty on employers to ensure a safe work environment for its staff is further extended by some specific regulations to cover even employees of other companies who work in their premises. For instance in the United Kingdom, Construction Design and Management 1994 (CDM) Regulations places a great emphasis on the need for co-ordination of plans and co-operation amongst all relevant parties (e.g. the client, designer, planning supervisor, principal contractor and contractors) on a construction project that could influence the risks to those at work (White and Benjamin, 2003).

Several reasons could be adduced for the increased interest shown to supply chain health and safety management. Some of these reasons have been based on accident rate data. For example, earlier researches (Blank *et al.*, 1995; Hery *et al.*, 1996) found that the accident rate for contractors was higher than that for core employees. Based on their research findings, Blank *et al.* (1995) argue that a client in addition to ensuring that outsourced work is completed according to schedule, should also make sure that necessary health and safety precautions have been taken during the duration of the work.

Outsourcing of work puts quality, cost, and delivery pressures on the supplier/contractor to deliver good quality products/services within cost and time specifications. Under these circumstances, there is a tendency to “cut corners”. This

added pressure on suppliers, customers or shareholders meant that consideration should be given to supply chain health and safety, as ‘one accident or injury with one employer will have knock-on effects on others in the supply chain by disrupting supply or services’ (White and Benjamin, 2003, p. 16). Again, successful management and coordination of supply chain has been credited as a major contributor to the success or failure companies. Thus, there must be a willingness to share any mutually beneficial information along the supply chain in addition to a provision of the means necessary to translate such information into a value yielding processes (Siemieniuch *et al.*, 1999).

White and Benjamin (2003) note that many organisations depend on a number of others, often firms smaller than them, in order produce goods on time and to an acceptable and reliable standard. As a result, good communications about health and safety matters between all parties can make these relationships better for everyone. This view by White and Benjamin (2003) highlights not only the importance of the role of an effective supply chain on the competitive of companies, but also the contribution of partnerships and good safety record towards realising the business strategies of companies. There is also an observation that health and safety were essential issues to be considered when dealing with companies within a supply chain. For instance, working safely with these supply companies could help client businesses, while un-safe work practices may have adverse operational, financial or image repercussion on the organisations involved (White and Benjamin, 2003).

Some other studies suggest that the pressure to maintain good health and safety record seems greater on smaller businesses. For instance, Rimington (1998) notes that the increased emphasis by bigger firms on the health and safety capability of their suppliers meant a gradual squeezing out of those who do not measure up to this standard from the supply chain. Even though there is a general consensus that ‘good health and safety is good business’, there is a possibility that although smaller businesses may be interested in improving their health and safety standards, they may not possess the required expertise, intelligence or resources to deal with health and safety problems (Pickvance, 2003).

There have been views on the importance of good supply chain health and safety from a good manufacturing and management practise point of view (Percival-Straunik, 1998; The Engineering Employers Federation, EEF, 1999). For instance, Percival-Straunik (1998) suggests that some large firms are increasingly regarding good health and safety performance to be a good indicator of the general competence of a firm.

Further benefits that could be derived from a supply chain that is well managed and having an effective good (health and safety management) practice arrangement have been discussed in The Engineering Employers Federation (EEF) (1999). These benefits include reduced risk of accidents, ill health and environmental damage, greater customer (client) and supplier (contractor) satisfaction, fewer incidents, losses, delivery problems and delays, less management time devoted to resolving problems, ability to demonstrate continual improvement within the business, and financial savings.

3.8.1 Strategies for improving health and safety in supply chains

Although several activities aimed at promoting good health and safety management practices in organisations have been tried, there is still no generally accepted way of doing this. Some methods rely on the amplification of the negative effects of poor health and safety management – popularly known as the negative motivators. These include the fear of public criticism, the imposition of fines by the regulators, huge payments made as compensations, increase in insurance premiums, etc.

The other strategy aims to amplify the benefits of good health and safety procedures. An example of this is the "Good Health and Safety is Good Business" campaign by the Health and Safety Executive, UK. Despite this, there have been arguments in favour of using of negative motivators to promote better health and safety management. For instance, Bottomley (1999) observes that the uptake of OHSMS seems to be driven by 'negative motivators', such as the avoidance of public criticism, compliance and avoidance of penalty, and the reduction of costs generated by poor OHS performance; and this perhaps explains the marginal impact of 'OHS is good business' campaigns compared to those highlighting the consequences of failure.

There is also a view held that messages emphasizing the positive aspects of good health and safety record like the maintenance of a good public image, or creating an impression of being a socially responsible and law abiding organisation are more powerful and should be utilised more than 'Safety Pays' message. Consequently,

greater attention should be paid to these so-called ‘negative’ factors when promoting OHSMS (Bottomley, 1999).

Nonetheless, irrespective of which strategy is adopted, health and safety performance of an organisation can be improved either through a process of persuasion or punishment (this shall also be referred to as either compulsion or coercion in this work) as shown in Figure 3.8.1 (Source: Seljak *et al.*, 2000, p. 44) below. Persuasion for the purposes of this research is defined as “the process that regulatory agencies use to provide information and advice to employers and others that have legal obligations, of their rights and responsibilities” (Seljak *et al.*, 2000, p. 46). Punishment on the other hand is defined as “*actions by regulatory agencies to coerce employers and others to comply with the law*” (Seljak *et al.*, 2000, p. 44).

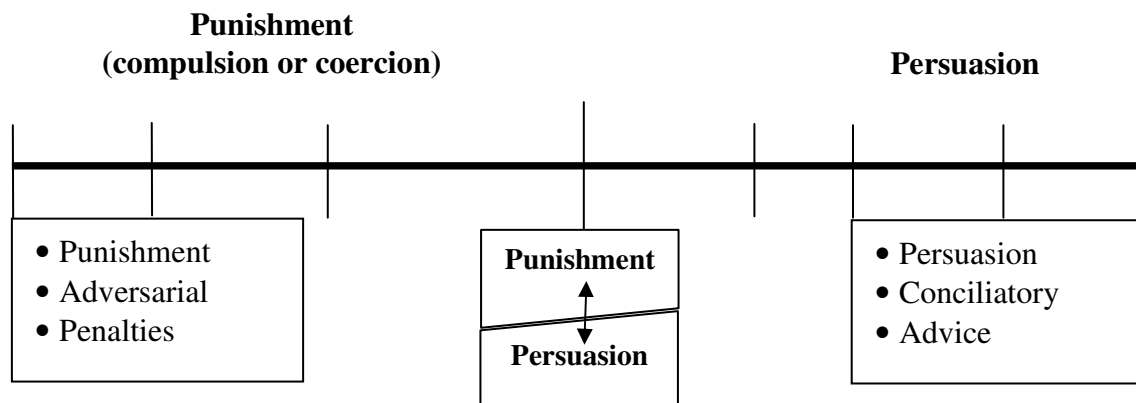


Figure 3.8.1: Health and safety enforcement spectrum (adapted from Seljak *et al.*, 2000, p. 46)

There have been far reaching arguments on the best way to ensure that desired improvements in workplace health and safety performance. For instance, Hopkins (1995) ponders whether compliance to health and safety rules and regulations could

be best achieved through prosecutions and punishments when violations are detected, or persuasion of violators (by means of education, advice, and warnings) to bring their practices into compliance with the law.

Authors such as Hawkins (1990) believe that strategies that encourage compliance through co-operation and persuasion are more effective than those based on enforcement. A typical program of persuasion involves the education and coercion of organisations to manage health and safety better; an explanation of the reasons behind certain demands being made, as well as the reasons for certain regulations; discussions on continuous improvement ideas, as well as dialogue, trust and negotiation through a continued relationship. European Network for Workplace Health Promotion (2001) argues that any model of safety improvement based on persuasion is likely to succeed because it would be widely accepted by participating SMEs, and secondly it addresses the specific needs the SMEs. This reflects the view that model that tailoring intervention strategies to the needs of smaller businesses ensures widespread acceptance by recipient organisations (Gallagher *et al.*, 2001). On the other hand, coercion as a strategy for driving forward improvement activities in SMEs, and indeed any other organization, advocates the application of compulsory measures such as the imposition of clearly defined rules that should be adhered to. Thus, this method leaves little room for discretion or manipulation, and also enforces compliance when limits of tolerance are exceeded.

A differing view to Hawkin's (1990) argument has been expressed. This view advocates a strict enforcement of regulation, arguing that capitalism encourages

companies to act in self interest rather than for the social good, and therefore the use of sanctions should begin much earlier in the regulatory process (Pearce and Toombs, 1990). There are also observations that brief inspections that do not result in penalties have little impact on improving occupational health and safety performance, whereas inspections that result in penalty “...has a certain shock value which serves to focus management attention on questions of health and safety which in turn leads to the real safety improvements...”. (Hopkins, 1995: p. 89)

While the use of coercion or punishment as an improvement strategy would seem acceptable to many, there are observations that this should be used rationally and complementarily with persuasion. Subsequently, there are observations that although the threat of enforcement is needed, the need to maintain a policy of flexible enforcement capable of maximising compliance through a process of consultation and tough bargaining demands that inspectors should act both as consultants and as enforcers (Bardach and Kagan, 1982). Also placing an undue emphasis on strict compliance methods could lead to distrust by employers as well as a culture of avoidance rather co-operation (Bardach and Kagan, 1982). Thus, an optimal enforcement strategy would be best achieved through a sensible mix of persuasion and punishment (Ayres and Braithwaite, 1992; Haines, 1994; Gunningham *et al.*, 1998). Seljak *et al.* (2000) agree that both persuasion and punishment methods could be combined into an enforcement model. However the resultant model will be influenced by factors such as trade unionism. They further argued that whereas a co-operative enforcement model is more likely to succeed in places (e.g. continental Europe) where unions play strong roles in the economy and are an accepted part of

the management of organisations, a more adversarial approach is likely to be adopted in places (such as USA) where unions play lesser role.

3.8.2 Safety improvement in supply chains using the cascade strategy

This strategy involves the passing down of decisions taken by an organisation occupying a vantage position than the suppliers. (Lamming, 1996, p. 191) notes that “the suggestion is that some decision is taken at a “high” level and the implications flow down to lower levels which, in turn, pass them on to their subordinates, and so on, like a cascading fountain.” Undoubtedly, the underlying assumption here is that the delegation of responsibility from customers to suppliers is enough to bring about the desired changes.

The cascade strategy portrays customers as inconsiderate capitalist who believe that their supplier’s competitive position their own concern and can only deal only with those suppliers who can meet their requirements and survive in a competitive market. Invariably, the supplier is more often forced into accepting these ideas which have been forced upon them. It could be inferred from Lamming’s (1996) work that this strategy does not encourage honesty and openness as the various partners view each other as being untrustworthy. This strategy is also seen by some as a tool for rationalising the supply base (Cousins, 1995).

3.8.3 Safety improvement in supply chains using intervention strategy

This is a multi-stage strategy employing different types of intervention in bringing about improvements in organisations. It is based on the belief that any form of

intervention (on an organisation's business operation) suggested by a customer is ultimately in the best interest of the supplier. Lamming (1996, p. 192), argues that improvements based on the intervention strategy "has paternalistic overtones - implying that it is only the supplier that needs to develop (or be developed) and that the customer can see how to do this (from the vantage point)."

There are two ways in which this strategy can be applied. First, it can be used in situations where an immediate improvement result is demanded. The customer uses experts to identify and rectify problems in the supplier's premises or operations and recommend actions to sustain it. Hence, there is little or no transfer of knowledge from the customer to the supplier. A major disadvantage of this form of intervention is that the improvement actions are short-lived if they are not consolidated. The other form of this strategy is a situation whereby the customer sends in experts to help their suppliers identify, implement and measure the effectiveness/benefits of implemented improvement ideas.

3.9 An overview of evaluation processes

In Section 2.5.1, it was shown that the review, measurement and audit of performance are the heart of any successful health and safety management system. These activities are usually integrated within a monitoring and evaluation process. An assessment of the impact of activities on the performance of organisations is usually a difficult task. For instance, it has been observed that for most activities, even in the very best of circumstances, it is more often than not difficult to understand causal influences (Lindquist, 2001). The assessment of causal influences is also constrained by the difficulties inherent in an initiative, such as this, carried out with a view to influencing

the way independent organisations manage their activities (Lindquist, 2001). The framework being proposed here could be faced with such difficulties.

Evaluation is concerned with a logical estimation of the worth or merit of an activity, through an orderly acquirement and assessment of information to provide useful feedback about some object. It is further described as a “process that leads to judgements and decisions about programs or policies” (Schalock, 2000, p. 6). An evaluation process, including its various types and models has been discussed extensively in earlier works (Cook and Campbell, 1979; McClintock, 1986; Rossi and Freeman, 1989; Chelimsky and Shadish, 1997). While some authors describe evaluation as a study designed to assist some audience to assess an object’s merit, worth and value of administration, output (Stufflebeam, 2000), others see it as a backward-looking appraisal of the merit, worth and values of administration, output and outcome of interventions intended to play a role in future, practical situations (Vedung, 1997).

Although the above descriptions portray an evaluation process as a systematic endeavour, policy, technology, person, need, activity, there are nonetheless major differences between these. For instance, an assessment of the worth and value of an initiative cannot be carried out if the evaluator is unable to collect necessary data or information that would help in the establishment of the efficiency and effectiveness of a program of intervention. In view of this, the researcher prefers the description of an evaluation process as that of collection and assessment of information on activities implemented by an organisation with a view to improving performance. Although

there are different reasons for monitoring and evaluating the progress made in the implementation of activities in organisations, the ultimate aim of many an evaluation program remains the provision of empirically-driven feedback capable of influencing decision making or policy formulation.

The information gathered during an evaluation activity will allow stakeholders to assess the overall implementation of the improvement initiative and determine progress against identified implementation action plan. It will also help in establishing if the chosen improvement initiative is meeting the aim of promoting good health and safety practices in supply chains through the outcome indicators.

The above suggests that although there are many reasons why organisations carry out evaluations, the determination of whether an improvement initiative is having the intended impact (effectiveness measurement) seems to be the greatest reason for most evaluations. Effectiveness measurement helps individuals and organisations to obtain the information needed for a better management of project. It not only encourages a culture of continuous learning and adaptation of existing practices in order to bring about improvements in projects or intervention within organisations, but also helps in the determination of how well a project or intervention performed. An evaluation that focuses on the structures or the causal entities that create these events, and seeks for ways of using this information to modify or change the structure or causal entities is more likely to be effective than that which focuses on the events itself (Bhaskar, 1975; House, 1991).

3.9.1 Classification of evaluation processes

Although the classification of evaluation has been noted to be a confusing one (Duignan, 2001), there are nonetheless two important distinctions used in the classification of an evaluation process. The first is the distinction between formative and summative evaluations, and the second is the distinction between a process and an outcome evaluation (Duignan, 2002). This classification is shown in Table 3.9.1 below.

Table 3.9.1: Formative and summative evaluations (Source: Trochim, 2006)

Model s of formative evaluation	Models of summative evaluation

Evaluation is also classified into formative, process, or impact/outcome, as a way of emphasising that an evaluation could take place right across the life cycle of a programme and not just at the end (Duignan, 2002) (Figure 3.9.1 below; Source: Duignan, 2002).

Figure 3.9.1: The relationship between types of evaluation and stages in the life cycle of a programme (Duignan, 2002)

The classification of an evaluation into any of the above types is usually guided by both the object being evaluated and the purpose for carrying the evaluation. The main purpose of a formative evaluation is to either strengthen or improve all or some aspects of the subject of evaluation, by examining not only the delivery/implementation of agreed actions, but also the quality of this. This is achieved through an assessment of the procedures, human resource issues, as well as the organisational context within which these were implemented. Thus, in formative evaluation, a needs assessment is carried out to identify existing problems as well as their magnitude. This involves an analysis of existing data sources as well as the use of surveys and interviews to clarify any areas of confusion. A summative evaluation on the other hand describes the impact or outcome of a programme of action. These

broad types of evaluation with some of their models are discussed in the sections below.

A **formative evaluation**, defined as an evaluation activity directed at optimizing a programme (Dehar *et al.*, 1993; Tessmer, 1993) is relatively new in the history of evaluation (McClintock, 1986). This form of evaluation, which is also known as design, developmental, or implementation evaluations (Duignan, 2002), is used to ensure that programme of activities are implemented as agreed. It is able to achieve this by adopting a much disciplined approach to evaluation, involving an independent critique and feedback on various aspects of the programme to the planners during the development stages (Duignan, 2001). An important aspect of this form of evaluation is that it purposely seeks ways to maximise the chances of success even before the implementation of an initiatives, it ensures that any planned initiative is tailored to the needs of the target (Centre for Health Promotion, u.d). A model of this form of evaluation – the process evaluation assesses if planned action are being implemented according to plan.

A **process evaluation** describes and documents what happens in the context and course of a programme to assist in understanding a programme and interpreting programme outcomes, and/or to allow others to replicate the programme in the future (Scheirer, 1994). Robson *et al.* (2001) note that process evaluation which is another name for formative evaluation, is often used to establish if the implementation of a planned initiative is being carried out as planned. This mirrors an earlier observation by Scheirer (1994) that process evaluation measures two important aspects of the

delivery of a programme - the scope of implementation and the extent of implementation. Despite the observations by Trochim (2006) and Robson *et al.* (2001) that process evaluation is a form of formative evaluation, Duignan (2001) argues that it may be useful, at least theoretically, to treat these as distinct forms of evaluation. Process evaluation, by providing information about what actually happened during the implementation of the initiative, becomes crucial for communicating best practice to others who want to replicate elements of a successful programme. It also ensures that an effectiveness evaluation can only be carried out when a planned initiative has been carried out as planned, thus saving organisations the time and trouble of conducting an effectiveness evaluation (Robson *et al.*, 2001), if necessary conditions for carrying it out have not been met.

Subsequently, this form of evaluation, which provides detailed information on what was done, what problems arose and what solutions were adopted (Duignan, 2001), is particularly relevant to this work, which seeks to transfer best practices between the different stakeholders. According to the Centre for Health Promotion (u.d), process evaluation examines the procedures and tasks as well as administrative and organisational aspect of the framework to ensure that adequate feedback is given about the initiative.

The intermediate outcomes as well as the impact of implemented activities in organisations are determined during an **outcome evaluation** - also known as summative evaluation (Duignan, 2001). Outcome evaluation is defined as an

assessment of the positive and negative results of a programme n (Cook and Campbell, 1979). It is also defined as:

“A type of evaluation that uses person- and organization-referenced outcomes to determine current and desired person- and program referenced outcomes and their use (program evaluation), the extent to which a program meets its goals and objectives (effectiveness evaluation), whether a program made a difference compared to either no program or an alternative program (impact evaluation), or the equity, efficiency or effectiveness of policy outcomes (policy evaluation)” (Schalock, 2000, p. 6).

An outcome evaluation helps organisations to obtain descriptive data on the progress of an implemented initiative. This often highlights short-term or intermediate outcomes, which are then benchmarked against other initiatives or strategies of similar nature. It should be noted that in reality, envisaged final outcomes of any improvement initiative may take several years to be realized/achieved, thus falling outside the timeframe of an evaluation (Duignan, 2001). In view of this, it is important that a set of outcomes ranging from the immediate outcomes to intermediate and final outcomes of the initiative (Duignan, 2001) are defined at the inception of the initiative.

The above view seems to be based on the premise that the achievement of each goal in the above outcomes, serves as an assurance that the next steps will occur. Were this to be true, then it could be rightly concluded that not only is it possible to measure achievements or outcomes at very early stages of an initiative, but also justifiable to assume that the latter will also happen as expected. The immediate effect of implemented action on the target audience include observed changes in knowledge or attitude, expressed intentions, policies initiated, as well as institutional changes made

(Centre for Health Promotion, u.d) and is usually highlighted in the programme's short term results. Although Duignan (2001) notes that outcome evaluation had, in the past, relied mostly on quantitative data to measure and express the progress made in the implementation of agreed actions, Mohr (1999) observes that it is also a good practice to express the level of progress using qualitative data as well.

3.10 Relationship among performance measurement, evaluation, and strategies

Although both measurement and evaluation are essential in establishing if strategies adopted by organisations are producing the desired results, a confusion in their purposes and the predominance of one over the other lead to major problems in organisations (Perrin, 1998). The only way to avoid this situation is to distinguish between evaluations and performance measurement. The observation in Duignan (2002) that while performance measurement is a routine activity that uses easily collected measures to monitor whether a programme is delivered, evaluation on the other hand, is a more strategic, detailed and expensive one-off activity, used to establish if a programme is achieving its objectives, provides a simple but sufficient distinction between these terms. Similarly Little (2002) explains that while a performance measurement provides a broad, shallow picture of the implementation of an initiative by answering whether a programme has achieved its measurable performance standards (or objectives), a performance evaluation on the other hand offers a much more narrower and deeper examination of the functioning of a programme of activity, by explaining not only why a programme was successful, but also highlighting any unintended benefits or consequences of a programme of activity, and offers suggestions for improvement.

It is essential that any decision to be made about performance measurement, evaluations and outputs should be made as part of the strategic discussion between high management, supply chain managers, health and safety managers and other stakeholders. A major objective of this discussion would be to determine programmes/initiative that can yield the desired outcomes, specify deliverables to be achieved in the next evaluation period, as well as the establishment of a structure that ensures that these agreed deliverables and targets are met. The relationship between these terms is shown in Figure 3.10.1, adapted from Duignan (2002), below.

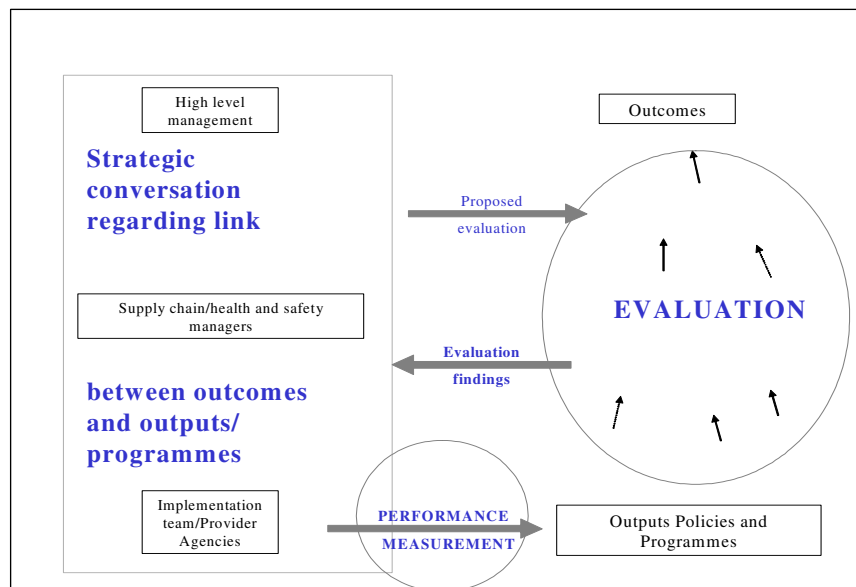


Figure 3.10.1: Relationship among strategy, evaluation and performance measurement (adapted from Duignan, 2002)

3.11 Summary of chapter

Through a review of relevant literature on supply chain collaborations (inter firm relationships, and knowledge transfer within organised networks), this chapter has reinforced the view that organisations need to collaborate with each other in order to enhance their collective and individual overall efficiencies and profitability.

It was evident that supply chain management techniques started in the manufacturing sector. Subsequently, the application of this technique to other industries outside the manufacturing sector with the same ease and effectiveness are often difficult. This difficulty is in most cases caused by the fragmented and project oriented nature of some industries, a situation that affects the level of trust among organisations.

Although it was shown that outsourcing practice is capable of increasing the level of risk importation by organisations, it is also worth noting that the same practice can, and indeed does bring about better and enhanced knowledge in organisations. This acquired knowledge when implemented by organisations leads to improvement in their performances. However, elements such as effective communication, clearly identified and agreed performance indicators, commitment by stakeholders, shared education, long term business relationships, clearly defined vision, effective leadership and control, etc, increase the success of any improvement initiative. These elements have been identified as critical success factors and would determine how effective the framework to be developed would be in bringing about the desired improvements.

A basis for the further study of other ways, such as the use of supply chain influences, which can be used to improve organisational performance, was established in Chapter 1. Chapter 2 took this further by discussing an aspect of organisational practice – health and safety - that is in need of improvement. Chapter 3 looked at elements of supply chain management technique that may help in bringing about this desired improvement in the health and safety standards of organisations. In Chapter 4, the

different options that can be used to gather information necessary to develop an evaluation and improvement strategy will be discussed under the heading, research approach.

Chapter 4

Research Approach

4.1 Introduction

Chapter 1 outlined the background to the research by highlighting shortcomings in the way that initiatives and programmes aimed at raising health and safety standards in sections of the economy that are usually hard to engage such as the SME sector had been carried out. Chapter 2 reviewed health and safety management literature, especially accidents, risk and its management, as well as safety management systems. And in Chapter 3, a detailed literature review of supply chain management strategy was carried out, paying particular attention to the role of collaborations and partnerships in increasing the capabilities and competitiveness of organisations. This was with a view to establishing a basis for using these techniques in bringing about improved health and safety management in organisations in a supply chain. This chapter will discuss the following approaches that were used in carrying out the research investigations:

- research strategy: multi-method approach incorporating both quantitative and qualitative approaches
- research design: utilising case study approach which allowed an in-depth study of an organisation and its supply chain safety management strategy
- research method: this involved the use of survey questionnaire to elicit views from organisations on various health and safety management issues

A mixture of the above approaches in this study represents essentially a triangulated research approach, which has been used in this study to enhance both validity and

generalizability, as well as to confirm and corroborate findings from the qualitative and quantitative methods. Further discussions on research methods and designs are contained in Appendix A.

This research is a nomothetic study that is both *theoretical* as it is *empirical* in nature. It is nomothetic because the conclusions drawn from it are not exclusive to an individual organisation or supply chain, but can be generalised across a wide range of areas. Its theoretical nature is rooted in the fact that it concentrated on developing, exploring and testing the theories or ideas held about health and safety management in supply chains and organisations. Furthermore, it is empirical in nature as the conclusions reached are based on observations and measurements of reality.

At the inception of the study, the researcher held no pre-defined views about the emergent framework. Rather, the study was planned in a way that allowed the method and the data to define the nature of the relationships in existence. Thus, this is more of an exploratory study than a confirmatory study.

According to Hair *et al.* (1995), whereas a confirmatory study seeks to confirm a pre-specified relationship, an exploratory study seeks to define the possible relationships in the most general form and then allow multivariate techniques to estimate the relationship(s) existing therein. Subsequently, the research was designed in a way that facilitated the study of safety management strategies in supply chains using various methods. There are so many views and definitions of what a research method or methodology is. Consequently, the researcher has adopted Bryman's (2001)

definitions of research strategy, design and method. These terms are described in sections 4.2, 4.3 and 4.4 below.

4.2 Research strategy used in this study

This research aims to develop a framework to evaluate critically health and safety strategies in supply chains in the UK, based on the researcher's understanding of organisations, taking into consideration both the social and economic context within which they operate. The researcher's judgement was that this would be best achieved through a combination of case study, interviews and questionnaires, documents and texts, as well as the researcher's interpretations, impressions and reactions to events. Although these are all activities characteristic of a qualitative research strategy, they were however used in conjunction with survey questionnaire - a quantitative strategy. Research strategy is therefore used in this study to mean the general orientation to the conduct of a social research (Bryman, 2001).

This *multi-method* approach enabled the researcher to confirm and corroborate findings and inferences drawn using from one method (qualitative or quantitative) by the other. Additionally, it enabled him to present a new perspective to the evaluation of health and safety management strategies in supply chains. There is a notion that quantification of textual data collected from activities such as surveys and interviews affects the understanding of health and safety management strategies from the point of view of the participants, with likelihood that its particular social and institutional context may be largely lost (Kaplan and Maxwell, 1994). In line with the observation by Rossman and Wilson (1984; 1991), the approach adopted helped the researcher to

address the above problem by using a triangulated multi-method approach to authenticate and substantiate his findings, provide a better view of safety management in supply chains through an elaborate analysis, as well as initiate a new line of thinking and fresh insight into supply chain health and safety management. Figure 4.2.1 below shows the adopted strategy with the make up of each individual strategy in a schematic form.

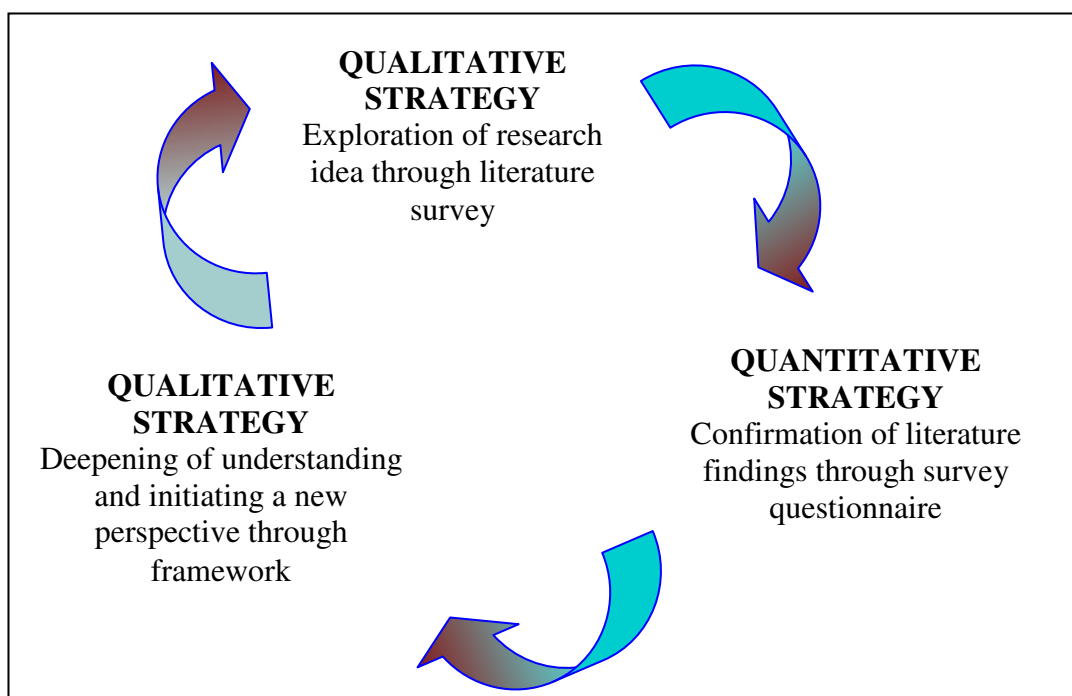


Figure 4.2.1: Research strategy - overview of qualitative-quantitative nature of study

Table 4.2.1 below is a further breakdown of Figure 4.2.1 above into phases having clusters of activities (with some activities overlapping), in a way that enabled the exploration of the theoretical and empirical nature of this study.

Table 4.2.1: Research phases

Phase	Activity	Explanation
Phase 1	Initial research idea	<ul style="list-style-type: none"> ▪ Stage 1 of this phase involved the identification of a research area and the formulation of research aim and objectives. ▪ The second stage helped to strengthen and sharpen the research idea. This was achieved through a literature review of supply chain management strategies, health and safety management, small and medium-sized enterprises
Phase 2	Identification of current improvement initiatives	<ul style="list-style-type: none"> ▪ This phase involved the search for initiatives that have been used to improve health and safety management in supply chains
Phase 3	Development of a framework	<ul style="list-style-type: none"> ▪ The first stage of this phase was concerned with establishing a theoretical basis that guided the development of a conceptual framework. This was achieved through a review of supply chain improvement models and results from an initial survey carried out
Phase 4	Refinement of framework	<ul style="list-style-type: none"> ▪ Based upon the feedback from phase three, a final version of the framework was then developed. It was also tested using case study organisations. The feed back received from these organisations helped in making a final modification of the model as necessary

4.3 Research design used in this study

The term research design is used in this work to mean the method for the generation of evidence that satisfied the research aim and objectives. It is against this background that the **case study** research design was chosen among other research

designs such as experimental (as well as quasi-experimental) designs, cross-sectional, longitudinal, and comparative designs. Although there are multiple meanings attached to the term “case study” (Myers, 1997), it is used here to describe a unit of analysis study such as a particular organisation or a supply chain, and not as a research method.

The case study design allowed the researcher to carry out a detailed examination of health and safety management strategies in some organisations. The findings from the case studies helped in the development of a framework to evaluate critically health and safety strategies in supply chains in the UK. It also helped the researcher to develop a clearer understanding of those factors that motivated (or de-motivated) these organisations to seek better health and safety standards, not only in their individual organisations but across their supply chains or parts of it. The case study, by offering an opportunity for an in-depth analysis of organisational systems, helped the researcher to identify principles that are capable of being generalised. The ability of case study to enhance the generation of externally valid (generalizable) ideas or principles has been recognised by others such as Curtain *et al.* (1992) who note that the strengths of a case study research lie in its ability to explain complex processes as well as the cause and effect relationships between key variables, while studying the process of change in its wider context.

The emphasis of this study, being exploratory in nature, was on the explanation and not on the description or prediction of safety management strategies in supply chains, and as such is best pursued as a case study (Yin, 1989). Furthermore, it focused the

research on the study of events in a specified time rather than dwelling on incidents and their frequency of occurrence. It also helped in the explanation of how organisations respond to the need to manage occupational health and safety in their supply chains, especially on why and how these initiatives were introduced, as well as what their relative performance were.

A major threat to the results from this research study was that of the validity of the conclusions drawn (Robson, 2002; Yin, 1994). Validity is used here to mean the extent to which the conclusions generated from this piece of research is reliable. The researcher took necessary steps to ensure that the following validity problems (also identified in Bryman, 2001) were avoided. First was the issue of **measurement validity**, which applies to the quantitative aspect of this research. That is, whether the results from this survey and other ones consulted reflected the concept (for instance the level of safety awareness, accident frequency and severity etc) that they were supposed to represent.

The second problem of validity encountered was that of **internal validity** concerned with the accuracy of causal relationship between two or more variables that have been stated. For instance, does outsourcing, size of firm, etc lead to a higher occurrence of accidents? Similarly, is there any link among the environment, practice, and performance of organisations as assumed in the chosen research paradigm? The third and final type of validity problem that was encountered was that of **external validity** or the extent to which the results of the study can be generalised beyond its scope. And like in any other research, subject bias and error, as well as observer bias and

error posed great threats to the validity of the findings from this research (Robson, (2002).

A study such as this which not only looks at the kind of relationship between a client and its suppliers or sub-contractors, but also at the level of health and safety management within these organisations, is prone to some elements of subject bias. Thus, there was recognition of the possibility that the respondents would give biased answers to questions, perhaps in a bid to cover their shortcomings in these areas. To avoid this, the researcher reassured the respondents of the confidentiality of their responses, as well as the fact that the research was an academic exercise designed to find other ways through which health and safety management in organisations especially SMEs could be enhanced.

A biased view on certain issues by the researcher is the most likely source of observer error in this study. To avoid this situation, the researcher made use of interview schedules and also recorded all interviews with a tape recorder. Observer bias is also another threat to the validity of research findings. It affects the interpretation drawn from the research data, and was avoided through the use of a third party in validating the conclusions drawn.

Although convinced in his choice of a research design, the researcher was conscious of identified weaknesses of case studies as a research tool. In this study, these weaknesses relate to issues of data collection, analysis, and generalisation of results. These were addressed by using a multi-method strategy that enabled results to be

confirmed and to be corroborated by the different methods used (triangulation) (Curtain *et al.*, 1992). Again, the extent to which a research finding can be generalized has to be put into perspective. Although case study results are not generalised to populations, they are however generalised to theoretical propositions (Yin, 1989).

A further argument could be made that the conclusions drawn from this study may not be applicable to organisations operating in countries or sectors different from the organisations that were used in the study. However, it is worth noting that although some aspects of the health and safety regulations are sector specific, the fundamental laws as enshrined in the health and safety at work Act 1974, as well as accompanying regulations, codes and management principles apply equally to every organisation. In view of this, the resultant framework is capable of being applied to other sectors and countries without losing its effectiveness. The researcher was able to address these aforementioned problems by using a triangulated research approach. The ways in which research triangulation was applied in this study is given in section 4.5.

4.4 Research method used in this study

Research method as used here means the technique used to collect data. The techniques used by the researcher to gather information and collect data included a postal survey, focus groups, informal interview with health and safety practitioners and managers, as well as examination of supply chain management documents and health and safety records.

Although the researcher could have used the case study, survey, or non reactive research method, to gather data for this study, he opted for the **case study** and **survey** options based on the following reasons. First, it enabled him to fulfil both the measurement and adequacy requirements which according to Brewer and Hunter (1989) are fundamental research requirements. The stringent confirmation and corroboration activities typical of triangulation ensured that these were achieved by using data that are both valid and generalizable. For instance, although the case study method gave the researcher an opportunity to study organisations in their current state, thereby ascertaining their health and safety management strategy, he was not able to establish how these organisations arrived at their current position. Consequently, the survey (questionnaire) method was used to obtain information from respondents on their perception of a range of health and safety issues. Furthermore, it is worth pointing out that by using the survey method, the researcher has addressed the issue of representativeness, validity, as well the researcher biases because “the conclusions deriving from a study using questionnaires may have measurement validity and a reasonable level of internal validity, and it may be externally valid ...” (Bryman, 2001).

4.5 Application of triangulation in this research study

In the preceding sections, the researcher explained the general research approach and the reasons for adopting a quantitative-qualitative approach, utilising case studies, case study, and survey questionnaires as tools for collecting data. This section will explain how research triangulation was applied in this work to overcome the intrinsic biases and problems often associated with the more traditional single method, single-

observer, and single-theory studies, by utilising multiple observers, theories, methods, and empirical materials.

First, in arriving at the choice of approach to this study, the researcher acknowledged the problems associated with each of his options. These all relate to how, as well as the extent to which findings from this study can be applied to other organisations, supply chains, sectors as well as countries. Thus, the major problems faced by the researcher were how to address problems of generalisation, data collection and analysis, all of which strongly influence research outcomes (Curtain *et al.*, 1992).

The best way to address these problems was to use a method such as triangulation which is used in social sciences to study and analyse events from different perspectives (Cohen and Manion, 1989), thus presenting a better and balanced picture of a situation (Altrichter *et al.*, 1993). By utilising different approaches – survey, case study, focus groups, talks and question and answer sessions, as well as using the same unit of analysis, the researcher was able to cross-check one result against another thereby increasing the reliability of the research findings. Triangulation also ensured the use of multiple sources of evidence, including observation, assessment of documentation and multiple interviews (Stoecker, 1991) as a means of minimising data collection and analysis constraints.

Often the purpose of triangulation in specific contexts is to obtain confirmation of findings through convergence of different perspectives, such that the point at which these perspectives converge is seen to represent reality. Between September 2005 and

October 2005, the researcher undertook a placement work in one of the case study companies. During this time he helped the supply chain as well as the health and safety managers in updating their supplier list. He was also responsible for the organisation of the 2005 Safety and Health Awareness day held in October 2005. This was organised in conjunction with two other major building contractors in West Midlands for the suppliers and sub-contractors. The placement gave the researcher an opportunity to establish a workable and convincing role in which to gather data through interviews, observations, and surveys. This is in line with the views by authors such as Bulmer (1982) that because of the special features normally exhibited by individual organisations, there was a need for the researcher to establish a workable and convincing role in which to gather data through interviews, observations, and surveys.

With the majority of the data for this study coming from organisations with a strong presence in West Midlands region of the UK, the researcher was concerned about the extent to which the results from data so generated could be generalised across populations (Robson, 2002;) Yin, 1994). Factors that threatened the generalizability (or external validity according Campbell and Stanley (1963) of this research, and which were similar to those identified by LeCompte and Goetz (1982) included the possibility that the findings may:

- be specific to the group studied
- be peculiar to the particular context in which the study took place
- have been influenced by the historical experiences which may have been shaped by the accident history, supply chain relationship etc., of the organisations under study

Denzin (1978) contains a thorough discussion on four types of research triangulation. This study utilised data as well methodological triangulations. The following is a summary of how these types of triangulation were applied in this study:

- a thorough literature review and case study undertaken (observation) fulfilled the **data triangulation** requirements
- the surveys and interviews carried out fulfilled the **methodological triangulation** requirements, which is a situation where multiple methods are used to solve a single problem. Methodological triangulation can be classified as simultaneous or sequential.

"Simultaneous triangulation is the use of the qualitative and quantitative methods at the same time. In this case, there is limited interaction between the two datasets during the data collection, but the findings complement one another at the end of the study. Sequential triangulation is used if the results of one method are essential for planning the next method. The qualitative method is completed before the quantitative method is implemented or vice versa" (Morse, 1991, p. 120)

These methods (for instance, talks, focus groups, question and answer sessions) were used in the various stages of this study as a way of increasing the validity of the findings. Method triangulation was achieved through the use of interviews (semi-structured, and unstructured) and meetings with collaborating companies, and external experts. Data triangulation on the other hand includes secondary research and information obtained through literature survey. A further clarification of the research issues was achieved through findings from literature and the initial data collation exercise. For clarity purposes and a better flow of this thesis, explanations of where and how these were used will be given in the subsequent sections.

Although it could be argued that the supply chains used in the case studies are not representative of the UK supply chains, thus affecting both the validity and extent to which the results can be generalised. Subsequently Gallagher, (1997) argues that the validity of a study is not measured by its representativeness but rather by the quality of the emergent theory evolving from it. Again, results of case studies do not rely purely on statistical inferences but rather exclusively on the theoretically necessary linkages among the features in the case study (Mitchell, 1983). Consequently, the validity of this study is to a greater extent dependent upon the cogency of the theoretical reasoning and not on the representativeness of the case. A counter view to the above argument that findings from a case study cannot be generalized to a wider population is presented by Yin (1989) who argues that while in statistical generalisation, empirical data collected about a sample are used in making inferences concerning a study population, analytic generalisation however makes use of previously developed theory as a guide upon which comparisons to empirical results from a case study will be based.

4.6 Generation of research data

As a non-experimental study, it was not possible to have direct access to factual data – that is data that is definite and permanent information that are independent of both subjective interpretation and paradigm. Because it is highly unlikely that true factual data could be accessed for this study (Gummesson, 1991), there was thus no direct access to factual data but only to the interpretations given to data by individual and groups to whom these data had been passed on to. The problems associated with this inability to have a direct access to ‘factual data’ were overcome by applying some elements of interpretive research while dealing with the underlying assumptions about

knowledge and how it could be obtained. Thus, the findings from this study would depend on the meanings that people have assigned to certain phenomena.

4.6.1 Survey Questionnaire

A survey questionnaire was used as a tool to collect primary data. Primary data as used here means data that is collected directly from people before being analysed to reach conclusions concerning issues under investigation. The collection of these primary data represented the first stage in the quantitative aspect of this research, aimed at having a clearer understanding and appreciation of general health and safety management related issues in organisations. Although these could have been achieved through so many ways, the following methods were those used in this study:

The initial research survey was carried out to establish the level of understanding of various health and safety issues in relation to supply chain which existed among different industry sectors and sizes by organisations. It was also used as an avenue to co-opt companies willing to participate in the case study. The survey questionnaire was a **structured** one containing a mixture of **open-ended** questions (where the respondents were free to respond to questions in their own words), **multi-choice** response (the respondent is restricted to pre-determined responses), **dichotomous response** (or yes and no responses)

During the design stage of the survey, the researcher had several meetings with industry groups, e.g. the collaborating companies, the representative of the European Process Safety Council, Health and safety practitioners, organised health and safety groups such as the Coventry and Warwickshire Safety Group and The Birmingham

Health, Safety and Environment Association. From these meetings, major items that formed the basis of the questionnaire were highlighted. The combined outcome of these meetings, literature review of health and safety management, supply chain management, environmental supply chain management works, led to a clear idea of the type of information and data to be collected using the survey questionnaire. These items were classified broadly into intrinsic (internal) and extrinsic (external) drivers, and these in turn determined the type of response by the organisation.

The final stage involved sending the questionnaire to professionals to assess the clarity, length as well as relevance of the questions. Piloting is a useful way of improving a questionnaire thereby making it more understandable. Lin and Mills (2001) note that pilot studies are conducted to examine the ability of a questionnaire to obtain the information necessary for the research, by highlighting potential problems and errors and leads to an improvement of wording for a better understanding of the questions. The questionnaire used in this study was tested by sending draft copies to:

- an academic at Middlesex University specialising in supply chain environmental management
- health and safety manager, and an inspector from Coventry City Council
- health and safety manager of a major auto manufacturer based in Coventry
- health and safety officer of Coventry University
- health and safety manager of a major supplier to a auto maker based also in Coventry
- members of a health and safety network, based in Coventry and Warwickshire

A sample of comments received from this process is shown in Appendix B.

Survey as a data gathering technique is credited with being an efficient way of collecting information from a large number of respondents, such that it is possible to determine validity, reliability, and statistical significance of responses using statistical techniques. They are relatively easy to administer, and economical because only those questions that are relevant to the study are asked and used in the final analysis.

These advantages notwithstanding, there are some notable disadvantages to the use of survey in data gathering. First, they are highly dependent on factors such as the motivation, honesty, memory and willingness to respond of the respondents. The researcher decided to use a self-administered questionnaires (postal survey) because they are less expensive than interviews and do not require skilled interviewers. Again, it ensured anonymity and privacy of the respondents thus encouraging more truthful and honest responses and there was less pressure put on the respondents.

4.7 Background to the industrial sector of the case study organisation

The research plan was to carry out case studies of supply chains of two industrial sectors. However, due to the uncertainty in the continued business of one of the collaborating companies, the project suffered a setback. In a bid to complete the project within the time frame, a decision was made to find another company that was willing for the researcher to use its supply chain.

As noted earlier, one of the researcher's objectives for carrying out a survey was to identify organisations that might be willing to be used as case study organisations. Fortunately, an SME construction company that completed the survey signified its interest in the project and after meetings between the company's management and the researcher, it was agreed that its supply chain would be used to pilot the project. The company in question belongs to the construction sector. In a report, *Rethinking Construction*, submitted by the Construction Task Force to the Deputy Prime Minister, John Prescott, on the scope for improving the quality and efficiency of the UK Construction, the Egan committee described the construction industry as one of the pillars of the UK domestic economy, having an estimated income of £58 billions in 1998 (about 10% of GDP), and employing about 1.4 million workers (Egan Task Force, paragraph 1). There are about 163,000 construction companies listed in the Department of Environment Transport and Regions' (DETR) statistical register, with most employing less than 8 people (paragraph 8).

Data from the Labour Force Survey of Spring 2003 issue suggested that the construction sector employs approximately 2 million workers in Great Britain. This figure which accounts for about 7% of the total UK workforce is made up of about 60% employees, 40% self-employed (Health and Safety Executive, 2004).

Although the construction industry, as noted in paragraph 2 of the report, could be regarded as excellent at its best, there is however a deep concern that the industry as a whole is underachieving. Thus, in order to address the problem of underachievement within the industry as well as improving the customer satisfaction level of the industry, the construction sector has set for itself a 10% reduction in construction cost

and construction time over a 10-year period (paragraphs 23 - 26). To achieve this set target and to support improvement, there was need for a substantial change in culture and structure of the industry with the ultimate aim of ensuring the provision of a decent and safe working condition (paragraphs 53 - 61).

However, there are evidences to suggest that the construction industry has a prevalently higher level of recorded fatal injuries and major accidents than most other sectors of the economy. For example, provisional figures released by the UK Health and Safety Executive shows that the construction industry accounted for 40.7% of deferred prohibitions, 59.6% of immediate prohibitions, and 30.8% of total notices issued by HSE for the period 2003/2004 (Appendix D). During the same period (2003/2004), the total number of recorded fatal injuries to employees, self-employed, and workers in the construction industry was higher than in most other industries (Appendix E).

The statement by Kevin Myers – HSE’s chief Inspector of Construction that “Last year 106 workers died as a result of accidents during construction work” shows the extent of fatalities in the Construction industry (Health and Safety Executive, 2002b). The UK construction industry has a high level of accidents and prohibition notices. Although according to statistics the industry represents just over 6% of the working population, it accounts for more than 30% of fatal accidents and over 14% of major accidents (Department of Trade and Industry, 2003). This statistics seem to have been supported by paragraph 54 of the Egan’s task Force report where it was noted that the health and safety record of construction is the second worst of any industry.

As a highly fragmented industry, the industry has its constraints and prospects. On the positive side, there is more flexibility in dealing with highly variable workloads. The disadvantage, however, is that there is an amplification of the use of contractual relations due to the extensive use of sub-contracting (paragraph 9), and this practice has been blamed for the rise in workplace accidents (Mayhew and Quinlan, 1999). However as noted in paragraph 12 of the Egan report, the negative impact of this fragmentation could be minimised through the use of tools such as partnering.

Furthermore, ensuring customer satisfaction as stated in paragraph 17 of the Egan's report entails the delivery of quality product and service at the right price and on time. But as we all know, this is affected by disruptions caused by accidents, injuries and ill health suffered at work. Again, in order to achieve the 10% reduction in construction cost and time as specified in the revitalising health and safety, there is need for an effective measurement of performance (paragraphs 23 – 26), through the use of techniques such as supply chain partnering to eliminate waste while increasing value for customers (see Chapter 3).

From the above, it has been shown that the stated aims and objectives of the research would be best realised by using the construction industry. The industry although having an above average record of accident and injuries and a low level of supply chain management, has recognised the need for sustained improvements in the quality and efficiency of its services including health and safety, with a view to encouraging the replacement of competitive tendering with long term relationships within the supply chain.

4.8 Unit of analysis

In order to stay within the aim and objectives of the study, a boundary within which it would be carried out was defined, thus limiting the data used in the study to those information that were relevant to the aims of the research (Yin, 1994; Stake, 2000). Based on the stated aim of this research, the logical unit of analysis becomes the external supply chain up to the second tier, as it would involve a study of the business practices of the firms that make up the chain (New and Payne, 1995).

A supply chain consists of many organisations, and a study of the relationships among these organisations or units is daunting if not almost impossible. From Figure 4.8.1 below, it could be seen that there are two possible units of analysis. The first is the “client – main contractor – sub contractor” unit, while the second is the “sub contractor – supplier – manufacturer” unit. However, the fact that the client organisation occupies a strategic position (as the originator of projects) it makes sense then to limit the study to the “client – sub-contractor” unit. In view of an earlier definition of supplier to mean contractors and suppliers, the unit of analysis treat the “client – supplier” interface (i.e. the area within the red curve in Figure 4.8.1 below). The choice of the unit of analysis has been based on the need to limit the complexity as well as ambiguity of the of the supply chain to a unit that would enable a better understanding of the entire supply chain (New and Payne, 1995).

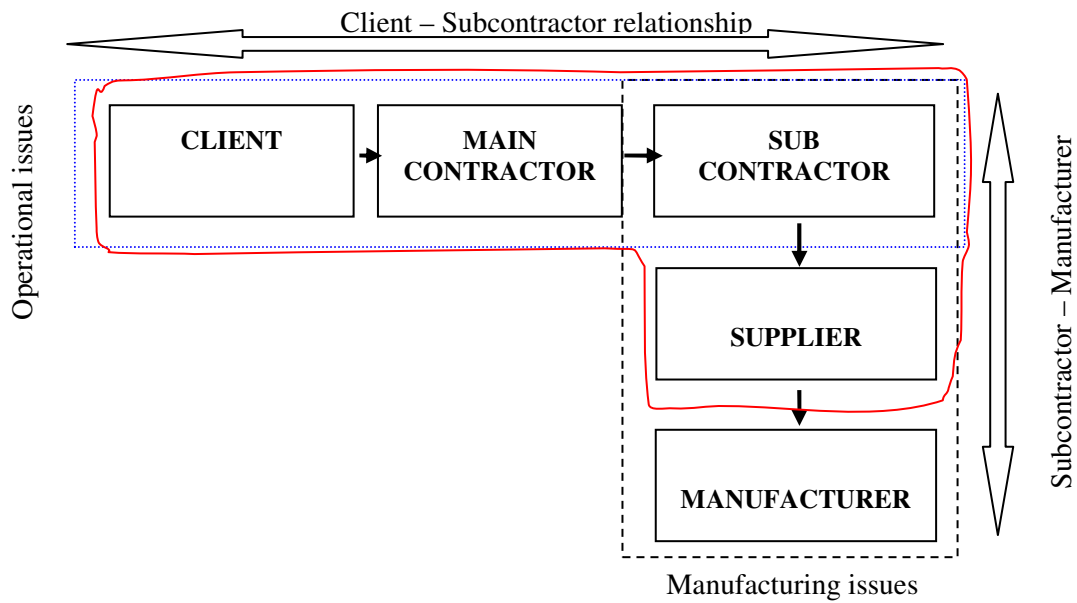


Figure 4.8.1: Possible units of analysis

4.9 Research model and framework

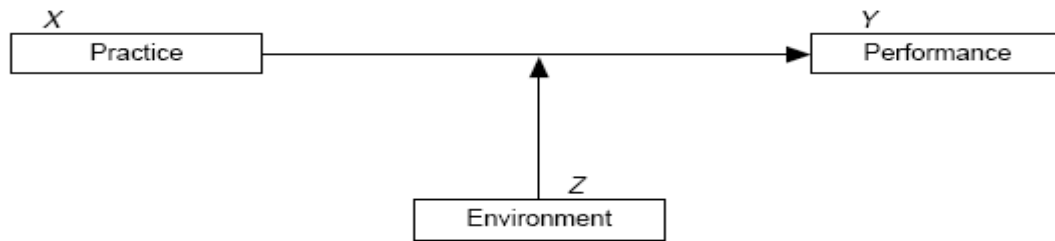
The achievement of the stated aim and objectives of this research is only possible if the study is able to make a link between some market factors that shape an organisation's culture, and how these factors impact on its performance. For instance, Nabli and Nugent (1989) argue that organisations are set in particular environments to which they are inextricably linked, and which provide multiple contexts that affect the organisation and its performance, what it produces, and how it operates.

Other authors who have attempted to establish a link between a business environment and level of performance include Scott (1995) who notes that an enabling environment is a crucial factor in understanding and explaining the forces that help shape the character and performance of organisations. Furthermore, Picciotto and

Weisner (1998) argue that the effectiveness and efficiency of organisations as well as individuals are affected by the environments within which they are located, and the creation of such environments is increasingly becoming a vital aspect of any development assistance.

More emphatically, Savedoff (1998) argues that an understanding of the forces outside the organisation that can facilitate or inhibit performance is necessary in any effort to diagnose and improve the performance of that organisation. Consequently the underlying assumptions of this research have been based on paradigms or frameworks that allowed the researcher to link organisational performance, practice and business environment. This purpose is can be fulfilled by adopting the logistics research frameworks (Figure 4.9.1 to 4.9.3 below) proposed by New and Payne (1995).

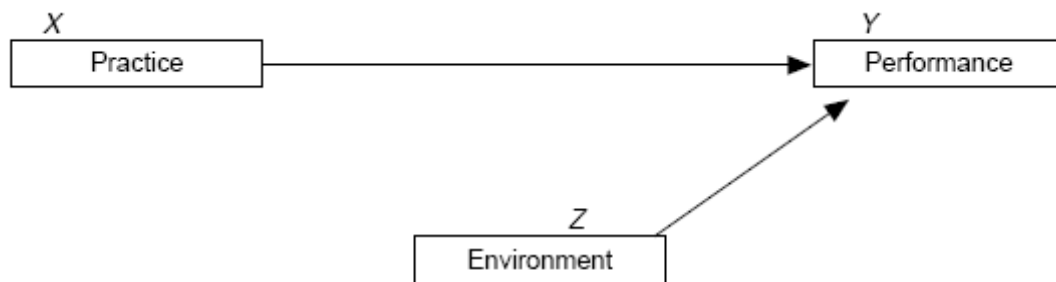
Paradigm 1: Organisational performances are determined by its practices; and this is shaped by the environmental influences.



Note: X causes Y, mediated by Z

Figure 4.9.1: Research Paradigm 1

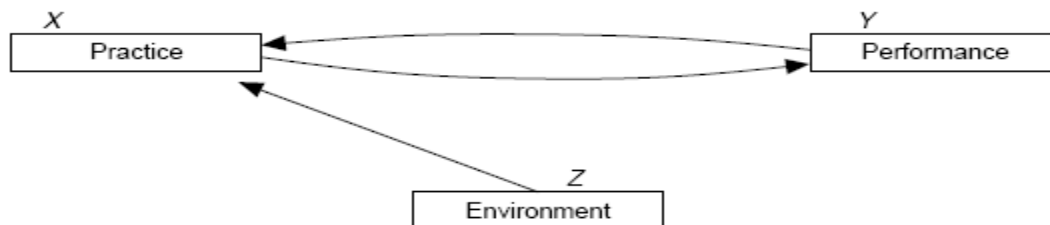
Paradigm 2: Performance is driven independently by both practice and the environment.



Note: Z and X cause Y

Figure 4.9.2: Research paradigm 2

Paradigm 3: The environment determines practice. Only appropriate practices survive.

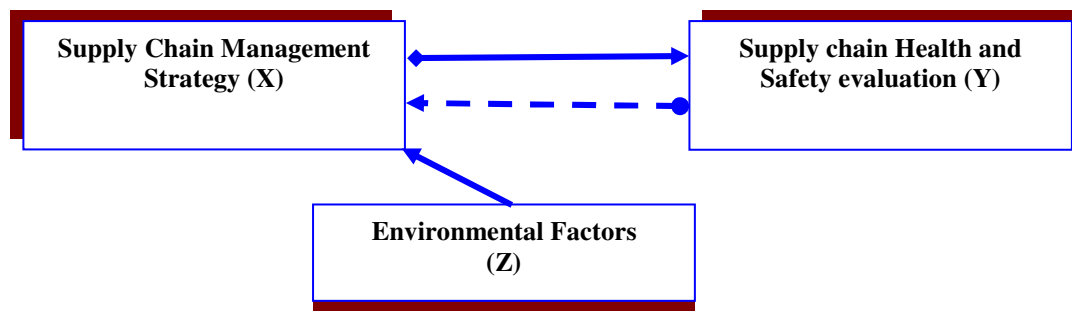


Note: Z causes X, moderated by Y

Figure 4.9.3: Research paradigm 3

It should be noted that although these paradigms can all be used in logistics and supply chain studies, they will however have different and varying impacts on the performance and culture of an organisation. Out of these paradigms, paradigm 3 most suited the purposes of this research for the following reasons.

First, it was imperative that a clear understanding of the factors that influenced organisational behaviour were established so as to ensure that an effective evaluation of current practices and or improvement framework can be developed. Paradigm 3 fulfilled this by helping the researcher to identify and examine how organisations' supply chain management strategy emerged (evolved). Furthermore, it was necessary that the research should also examine specifically the level of the impact of environmental variables (such as legislation, organisational culture, supply chain factors, etc) on the practices and overall performance of an entire or part of a supply chain network, and also provide a theoretical description of the interaction between these and organisational practices. Previous studies carried out within the field of supply chain management had identified that improvement initiatives undertaken by organisations were motivated by both internal and external environmental factors. The level of improvement in trust, commitment, communication, operational or managerial improvement in turn impact on the supply chain strategy adopted by the client. The research model is as shown in Figure 4.9.4 below.



Note: Environmental factors such as legislations, client requirements etc (Z), influence management strategy (X), and are moderated by health and safety improvement (Y)

Figure 4.9.4: Research model

Although the research model proposed above forms the basis for the design of the research framework, it does not illustrate the inter-relationship among the different components of the variables shown. The research model contains three distinct variables upon which a framework was based on. These variables – environmental factors, supply chain management strategy, supply chain health and safety evaluation - formed discrete events and behaviours or “intellectual bins” according to Miles and Huberman (1994) . Furthermore, the choice of a research model was guided by the fact that this research, having been designed to investigate customer-supplier relationships such as this, should be carried out using an approach that is not only holistic but also carried out within an all inclusive conceptual framework (Bresnen, 1996)

Again, as a study carried out within a case study setting, and in the view of (Robson, 2002), the main feature of a case study and their presumed relationship can be illustrated within a conceptual framework. As a result, the framework suggested has

been informed by theory and practice. It is based upon findings from a preliminary research survey conducted by the researcher, as well as findings from literature review carried out. Thus the suggestion by Miles and Hubermans (1994) that researchers should incorporate their background knowledge into the research design has been adhered to.

Figure 4.9.5 below (a combination of Figure 4.6.3 and Figure 4.9.4) shows how these intellectual bins were expanded, based on literature finding and results from the preliminary survey carried out, to show the various components that make them up.

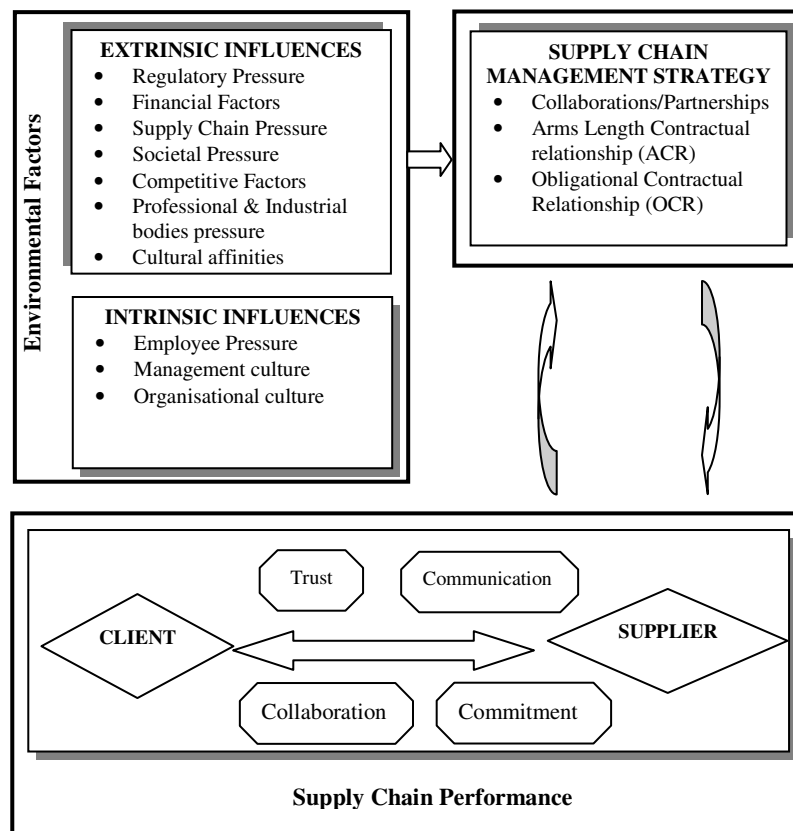


Figure 4.9.5: Research framework

Environmental factors: Environmental factors for the purposes of the research are those factors - internal and external, which determine organisational practices or structure. During the period of this study, certain factors deemed as internal to an organisation have been identified as playing a role in shaping its organisational practices and culture. These factors have been classified as intrinsic influences in Figure 4.9.5 above. Other factors classified in this thesis as extrinsic influences are also known to contribute to organisational practices and thinking.

Supply chain management strategy: Various types of supply chain management strategy were highlighted in chapter 2. These include ACR and OCR strategies. Other areas discussed in chapter 2 were collaborations and partnerships in supply chains as well as organisational learning etc. These practices (strategies) are greatly influenced by the environmental factors already referred to above.

Supply chain performance: The view by Collin (2003) that a supply chain is a vehicle through which firms can achieve competitive advantage in markets, as well as that by Christopher (1998) that supply chains that add more value to the customers are the most successful companies adds credence to the notion that supply chain management strategy influences the performance of individual organisations within the supply chain. In terms of overall supply chain performance, these include improvements in the level of trust, communication, individual commitment, as well as collaborations among the members of the supply chain. With regards to health and safety, these improvements are in the form of observable and real commitment of management to OHS, penetration of OHS policy to the organisations, commitment of

the enterprise and its workforce to the policies put in place (KPMG Consulting, 2001), reduced number of accidents, injuries and ill health.

4.10 Summary of chapter

This chapter has presented and discussed the research model and approach chosen by the researcher for the collection of empirical and qualitative data that would be used in this study. This choice was influenced by the view that organisational practices are influenced by the environment within which an organisation operates, such that its performance is dependent upon its adopted practices.

A multi-method research approach was adopted because it would help in the exploration of the environment-practice-performance relationship implied by the chosen research model. This method also ensured that the relationship among health and safety management factors and supply chain management factors was explored. The use of research triangulation in substantiating, validating and ensuring the generalizability of research findings is shown to have increased in popularity in social science research. The research method adopted here allowed the findings at the various stages of the study to be authenticated and substantiated using different methods (literature review, survey questionnaire, case study, focus groups).

A justification for the use of survey questionnaire in gathering empirical data was provided. This was necessary in view of the motivational, honesty, as well as willingness to participate issues associated with this mode of data collation. Other

factors that influenced the decision were the ease and cost associated with administering and collating information from large and diverse population.

Chapter 5 will be dedicated to presenting the data gathered using the research approach discussed in this chapter. It will go further to discuss the implications of this findings and how they would be utilized in the development of and evaluation and improvement framework.

Chapter 5

Results, Analysis and Discussion of Survey Findings

5.1 Introduction

This survey is designed to ascertain the level of organisational awareness of health and safety management issues in organisations. It shall further explore the views of participants on various supply chain network influences on, and issues related with health and safety management. This is with a view to exploring health and safety improvement intervention strategy based on these supply chain influences. It is thus neither designed to gauge level of compliance with health and safety regulations, nor to find fault.

This chapter presents and discusses the findings of the research survey that was carried out to assess the level of awareness by organisations of health and safety issues. An analysis of factors that motivate as well as constrain organisations from establishing structures and programmes that could bring about improvements in health and safety performance is also contained in this chapter. Additionally, it shows an analysis of the resources (material or otherwise) available to organisations within a supply chain that would help them to pursue initiatives necessary to bring about desired improvements in health and safety standards within their organisations. The questionnaire used in the survey was divided into eight sections as follows:

- Section A: This investigated the demographics of the company, looking for basic company information such as name, size, and sector. It was aimed at categorising the respondents into enterprise size and industrial sectors, thereby ascertaining how representative the responses were
- Section B: This section was used to assess the level of awareness of, and commitment to health and safety management issues by the respondents

- Section C: This section looked at the existence of health and safety policies in the respondents' organisations. Health and safety policy documents or statements (for smaller organisations) represent the most basic sign that organisations are aware of, and have put in place necessary steps to minimise or mitigate accidents and injuries in the organisations
- Section D: This section explored those factors which motivate better management of health and safety in organisations. The questions in this section were used to find out if other factors apart from safety legislations play a role and to what extent they help to improve health and safety management by organisations
- Section E: Explored the constraints to health and safety management
- Section F: The extent to which organisations receive help and support from other organisations – suppliers, customers, etc towards their efforts to improve health and safety performance
- Section G: This was used to assess the extent to which organisations use health and safety performance in their assessment and evaluation of their suppliers and sub-contractors
- Section H: This looked at the level and type of support offered by organisations to the smaller suppliers and contractors in establishing health and safety management systems, as well as in other initiatives aimed at minimising the frequency and severity of accidents

A sample of the questionnaire used in survey is shown in Appendix C.

Some of the questions asked were informed by findings from a literature review of health and safety management, as well as partnerships and collaborations within supply chain networks. Other questions were either taken from or adapted from questions used in earlier studies such as Holt and Kockelbergh (2003), Vasie *et al.* (2000), and Lammin (2001) that had either studied health and safety management in organisations or the influences of networks on performance improvement in organisations.

5.1.1 Sampling method used and its limitations

A major pre-occupation for the researcher was how to obtain responses from organisations from different sectors and of different enterprise sizes. Subsequently,

while providing a representative sample of business enterprises in the UK would have been highly appreciated, it was however, not a major consideration. In view of this, an area probability sampling which is a sampling technique in which the population of interest is divided into groups, or clusters, and then a random sample of clusters is drawn to represent the population of interest was adopted for this study (Fowler, 1984; Levy and Lemeshow, 1991). It should be noted that cluster units can be geographic, temporal, or spatial in nature (Levy and Lemeshow, 1991).

The estimation of the Department of Trade and Industry estimates is that there are over 4 million business enterprises in the United Kingdom (DTI Small Business Service, 2004). Within the time and resource constraints of this study, it is therefore not feasible to survey of every business enterprise in the United Kingdom. In view of this, multistage cluster sampling was applied in this study. The first stage in this process, and which is an acceptable practice within social science research, was to define a geographic location. For instance, Baker (2002) observes that in circumstances where every member of a population cannot be identified, one has to define the groups or clusters to be sampled on the basis of suitable clustering factors such as convenience and accessibility. Thus, the survey sample was geographically restricted and data for the analysis were gathered through survey questionnaires distributed to businesses in two major cities in West Midlands, UK - Coventry and Birmingham. Within this geographic cluster, another decision was also made to distribute these questionnaires to organised group (Coventry and Warwickshire Safety Group and the Birmingham Health, Safety and Environment Association).

Although sampling was restricted to a given geographic area, the second stage of the sampling process ensured that the sampling was restricted neither to a given industrial sector nor to an enterprise size band. Hence, the use of a simple random sampling of business enterprises in Coventry, listed in the Applegate Directory. A simple random sample is “*one in which every member of the population in question has an equal (and nonzero) probability of being selected every time a unit is drawn for inclusion in the sample*” (Crano and Brewer, 2002; p. 173). This was achieved by copying all listed business enterprises into Microsoft Excel and using the command “=RAND(0,1)” to generate random numbers. These entries were sorted and those with “1” were chosen until the desired number of entries was selected.

The above processes were undertaken in order to obtain a representative view on the questions asked, thus avoiding a skewed analysis. A major advantage of this method was the opportunity to sample as economically as possible without losing the characteristics of the probability sample. This is because it offered a time and cost efficient way to sample a population that is spread across a large geographic area (Levy and Lemeshow, 1991, Crano and Brewer, 2002). These advantages notwithstanding, there are obvious limitations to the use of cluster (including multistage cluster) sampling technique. First, because clusters generally are not of uniform size (Crano and Brewer, 2002), there is a likelihood of bias and sampling error in the choice of respondents. The second limitation of this sampling technique relates to the extent of homogeneity or representativeness of respondents. In spite of these limitations, the researcher remained confident that this technique would not skew the results. This level of confidence could be attributed to the view expressed in Crano and Brewer (2002; p. 181) that:

“... if the population clusters are relatively heterogeneous (i.e., if the individual clusters provide a representative picture of the overall population), multistage sampling will generate estimates as precise as simple random sampling.”

The effects of these limitations were duly recognised by the researcher. And it was with these in mind that a more precise simple random technique was also applied within selected clusters. Furthermore, it was based on this recognition that a decision to break down the respondents into enterprise sectors and sizes was made (Section 5.2 below).

5.1.2 Determination of required sample size

Literature findings show that the minimum number (i.e. effective responses) required for minimal statistical analysis is 30 (Hatch and Lazaraton, 1991). In determining an appropriate sample size for the survey, the researcher was guided further by the observation that “If your goal is to do just basic statistical analysis (sometimes used to support more qualitative data analysis), you will generally need a minimum of about 30 respondents” (O’Leary, 2004). Subsequently, the determination of the number of questionnaires to distribute in order to achieve this minimum sample size was based on the following assumptions:

1. Minimum sample size = 30
2. Estimated response rate = 10.28% (based on Holt and Kockelbergh, 2001; p. 681)

$$\text{Number of questionnaires to distribute} = \frac{\text{minimum number of respondents}}{\text{anticipated response rate}}$$

$$\begin{aligned}\text{Number of questionnaires to distribute} &= \frac{30}{\left(\frac{10.28}{100}\right)} \\ &= 30 \times \left(\frac{100}{10.28}\right) \\ &= 291.8\end{aligned}$$

$$\text{Number of questionnaires to distribute} = 292$$

This figure was divided into three parts of 97 questionnaires each and distributed to the three separate sub-clusters - Birmingham Health, Safety and Environment Association, Coventry and Warwickshire Health and Safety group, and business enterprises in Coventry listed on the Applegate Directory.

5.1.3 Response rate achieved and its implication

There were 450 questionnaires sent out, out of which 121 were returned, with 114 valid responses. This represents a 26.9% response rate. Although Fogliani (1999) notes that low response rates can significantly affect the accuracy of survey estimates, the researcher felt that a response rate of 26.9%, although low, would not considerably affect the outcome of the study. This view is informed by the response rates recorded in other surveys as shown on Table 5.1.1 below.

Table 5.1.1: Response rates achieved in other surveys

Citation	Response rate
Holt and Kockelbergh (2003; p. 681)	10.28% (149 useable responses out of 1450 questionnaires distributed)
Vasie <i>et al.</i> (2000; p. 37)	11.4% - UK respondents 13.9% - Spanish respondents
Smallwood (1998; 184)	6.2%
Stokols <i>et al.</i> (2001; p. 447)	27% (overall rate); 13% (initial rate)
Chen <i>et al.</i> (2006; p. 10)	10.8%

Although there are many published papers which used the survey method to generate data, the need to compare results from similar samples necessitated the choice of the samples listed on Table 5.1.1 above. The response rate achieved is again in line with the response rates achieved in other surveys shown in Storey (1994; pp. xvi – xviii). It could be inferred from Chen *et al.*, (2006: p.11) that performing a statistical analysis in a survey with responses equal to, or above this threshold (30) is valid. Thus, 121 responses achieved in this survey provide both reasonable and effective data for any statistical analysis, especially for a survey on sensitive areas such as health and safety. Organisations that did not return their questionnaires were not contacted because of several reasons. First, the questionnaires were sent through organised groups, therefore the identities of a majority of recipients were not known to the researcher. Secondly, even when the non-responding recipients' identities were known to the researcher, they were not contacted due to confidentiality reasons. Moreover, a reasonable response rate, compared to other surveys similar to this has been achieved.

5.1.4 Data analysis tool

The data were analysed using SPSS software. SPSS (Statistical Package for the Social Sciences) is a data management and analysis software produced by SPSS, Inc. in Chicago, Illinois. It can be used either to conduct basic statistical data analyses (such as descriptive statistics such as plots, frequencies, charts, and lists), or for more sophisticated inferential and multivariate statistical analyses (such as analysis of variance (ANOVA), factor analysis, cluster analysis, and categorical data analysis). In this study, the software was mainly used for descriptive analyses.

5.1.5 Survey population

Although the survey covered a relatively small section of the population under study, the author is convinced that this would not affect the validity of the result or conclusions to be drawn from this survey. This is because concentrating on a smaller population would make for an in-depth analysis as well as understanding of the study population, thus allowing for a more objective analyses and conclusions to be drawn. Furthermore, literature findings suggest that in surveys where the target population is large, a smaller percentage of the population is needed to achieve the same level of accuracy, such that the sample size should be determined by the size of the population. For instance, Glynn (2006: p. 391) notes that,

“There is no magic percentage of a population that is considered to be the most effective sample size, because the size of the sample is based on the size of the population. A general rule of thumb is that the smaller the population, the larger the sample size that is needed to ensure accurate results; the larger the population, the smaller the sample size that is needed”.

Subsequently, a consideration of the fact that at the beginning of 2003, there were over 4 million business enterprises in the United Kingdom, justifies the researcher's decision to concentrate on a smaller proportion of the population. Furthermore, there are observations that the validity of a study is measured more by the quality of the evolving theory and less by its representativeness (Gallagher, 1997).

5.2 Distribution of respondents

It was observed in Section 5.1.1 that using area probability sampling or cluster sampling (including multistage sampling) technique to gather data may yield data that are not representative of the intended population. Hence, this analysis is to determine the spread of respondents across industrial sectors and enterprise sizes. According to Glynn (2006), information from an under-represented population results in a biased study with inaccurate results. This analysis also ensures that findings from this survey are as valid as they are representative of the targeted population. Table 5.2.1 below shows a breakdown of the 112 valid responses received according to enterprise size and industrial sector.

Table 5.2.1: Distribution of respondents by business sector and enterprise size

Sector	Enterprise Size				Total
	1-9	10-49	50-249	250+	
Construction	3	7	14	14	38
Service	7	2	6	9	24
Manufacturing	3	5	11	9	28
Others	3	3	7	9	22
Total	16	17	38	41	112

A grouping of the respondents according to enterprise size (measured by the number of employees) showed that while 16 respondents (14.3%) were from micro companies (1- 9 employees), 17 respondents (15.2%) were from small enterprises (10 - 49 employees). A further 38 respondents (33.9%) were from medium sized enterprises (50 - 249 employees), while the remaining 41 (36.6%) were from large enterprises (over 250 employees). A similar distribution according to industrial sector shows that 38 respondents (33.9%) were from the construction sector, 24 (21.4%) from the Service sector, 28 (25.0%) from the Manufacturing sector, while 22 (19.6) classed themselves as others.

The willingness of an organisation to discuss its health and safety experiences is influenced not only by a confidence in its good health and safety record, but also by factors such as sector specific awareness creation activities and campaigns. For example, Table 5.2.1 above shows that the construction industry had the highest number of respondents. This could be attributed to the high level of health and safety awareness creation activities within the construction industry. As a result, organisations within this sector appear to be more open about their health and safety problems.

5.3 Impact of health and safety standard on organisations

This analysis of the impact of health and safety standards on organisations is intended to ascertain the views of organisations on the perceived impact of poor and safety standard on their image and operations. Thus, the underlying objective here is to confirm or disprove the notion that the level of health and safety standard impacts positively or negatively on the image (reputation) and operations (activities) of an

organisation. The views of respondents when polled on the perceived impact of poor health and safety standard on the operation and image of there are presented in Table 5.3.1 below. On the perceived impact of poor health and safety standard on their business operations, 108 out of 114 respondents (94.7%) felt that it had an impact on their business operations, while 6 out of 114 respondents (5.3%) felt it had no impact on their business operations. A further 103 out of 112 respondents (92.0%) felt that it had an impact on their business image, while 9 out of 112 respondents (8.0%) saying it had no impact on their business image.

Table 5.3.1: Impact of poor health and safety on image and operations

Enterprise size	Impact on business operations			Impact on business image		
	Yes	No	Total	Yes	No	Total
1-9	12	4	16	11	4	15
10-49	15	2	17	16	1	17
50-249	40	0	40	37	3	40
250 and above	41	0	41	39	1	40

The finding presented on Table 5.3.1 above is consistent with observations which suggest that poor health and safety standard affects the operations and image of businesses and by implication their economic viability. For instance, poor health and safety standards could lead to a reduction in the number of contracts awarded to an organisation from highly health and safety conscious organisations. The situation was alluded to in Rimington (1998) who note that customers take steps to ensure that problems with their bought-in supplies or services do not affect their reputation. Many organisations are also cautious of threats posed to their business operations by

the health and safety performance of their customers, and take steps avoid these (Dalling, 2000).

Rimington (1998) notes that good health and safety standard in an organisation leads to low staff turn-over (i.e., improved staff recruitment, retention, and job satisfaction). This indicates that a poor health and safety standard leads to less manpower, higher level of compensation, and a reluctance by more people to work for an organisation that is shown to be indifferent to the welfare (including health and safety) of its employees. Although this comment was not specifically on the impact of poor health and safety on the operations and image of businesses, a logical inference from this is that it has an impact on these aspects. This finding also supports the view that successful organisations pay as much attention to health and safety management as they do to other aspects of their business activities (Health and Safety Commission, 1995). Again, the works of authors like Davis and Teasdale (1994), Sznaider (2000), Pomfret (2002), Mossink and De Greef (2002), and Curran (2003) among others, suggest that there are cost implications to poor health and safety standard in organisations.

It was felt that the utilisation of a strong cause-effect relationship would help to further establish if poor health and safety standards had any impact on the image and operations of an organisation. Consequently, a non-parametric chi-square test was carried out to confirm the assumption that there was no association among poor health and safety record, the image, as well as the operations of a business. The result of this (Table 5.3.2 below) suggests that there is a degree of association among these three variables.

Table 5.3.2: Chi-square test of impact of poor health and safety management on business operation and image

	impact on business operations	Impact on business image
Chi-Square (a,b)	91.263	78.893
Df	1	1
Asymp. Sig.	.000	.000

- (a) 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 57.0.
- (b) 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 56.0.

The large chi-square statistics of 91.26 (impact on business operations) and 78.89 (impact on business image) and the small significance level ($p < .001$) indicate an unlikelihood that these variables are independent of each other. Thus, there is a relationship among the levels of safety standard, image as well as operations of a business. Subsequently, a conclusion could be drawn that poor health and safety standards (performance) affect both the operations (activities) and image (reputation) of an organisation.

Furthermore, medium sized to larger companies regard the protection of image or reputation as a major motivator for engaging in health and safety improvement initiatives (Figure 5.3.1 below). The protection of image as a motivator is as important to the SMEs as it is to large organisations. This finding reinforces the need for larger organisations to offer improvement support to their suppliers in order to

protect themselves from the negative impact of their suppliers' safety performance as suggested by Tamarelli (1995).

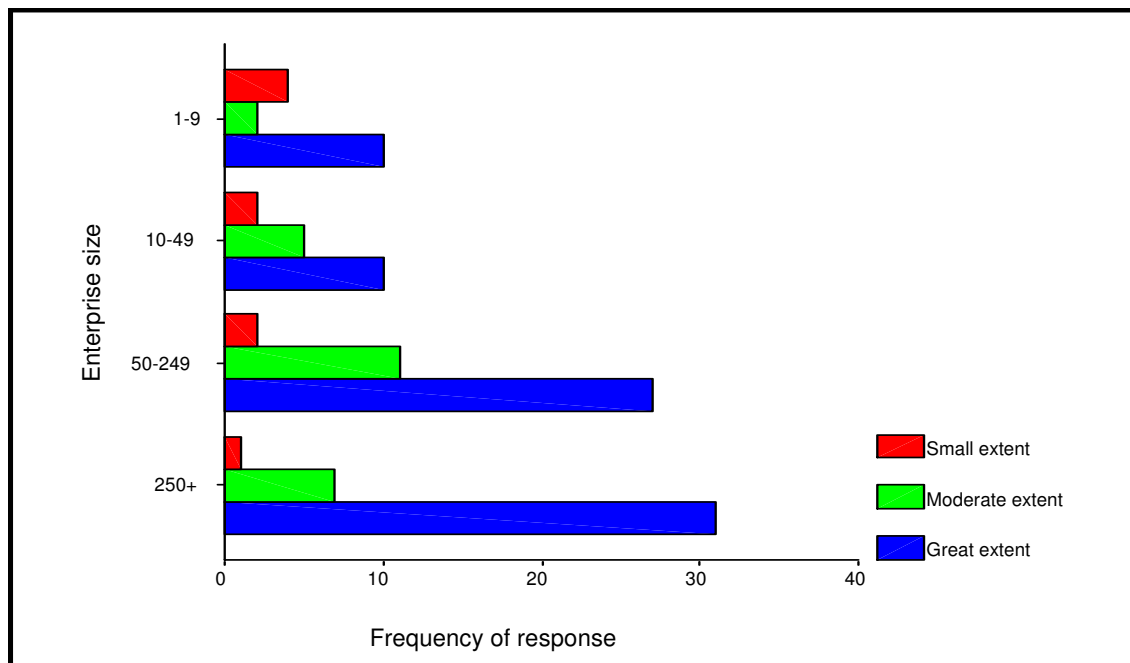


Figure 5.3.1: Protection of image as a motivator – distribution of respondents by enterprise size

This analysis helps to ascertain the views of organisations on the impact of health and safety standard on performance of organisations. The result of this analysis would then establish an empirical basis upon which the argument on the need for organisations to show more interest not only in their internal health and safety standards, but also in those of their business associates would be based on. It could be argued that an accident or ill health would have minimal or no impact on the activities and performance of another organisation. However, it is worth recalling the observation in Horvath (2001) that competition is no longer among individual organisations, but among supply chains. Subsequently, the supply chain that is better managed would have a competitive edge over the rest. This analysis subsequently

strengthens the argument that these organisations must, in their own business interest, develop or support initiatives designed to improve health and safety standards of other organisations that they have business dealings with.

5.4 Sources of information on health and safety issues

An examination of respondents' sources of information on health and safety issues shows that while 15 out of 113 respondents (13.3 %) got information on health and safety matters from trade unions, 88 out of 113 respondents (77.9%) use the Health and Safety Executive or its website. A further 95 out of 113 respondents (84.1%) got their information from safety journals, while 27 out of 113 respondents (23.9%) used the local authority, 84 out of 113 respondents (74.3%) from an industrial network/safety groups, and another 23 out of 110 respondents (20.9%) used their head office as a source of information. Table 5.4.1 below is a break down of responses received according to enterprise sizes.

There are several reasons why this particular analysis is important. First, it establishes those sources where organisations can get help and information from. Secondly, it assesses the advantages and limitations of these sources with a view to determining which of them would be the most effective way to communicate with organisations, especially SMEs, on health and safety issues.

An examination of the data on Table 5.4.1 below shows that organisations use the Health and Safety Executive and its website, health and safety journals, and industrial network/safety groups as sources of information on health and safety matters more

than any other source. The data suggest that fewer respondents preferred industrial network and safety groups as sources of information than the other two sources. However, as would be seen from the discussions below on the inherent limitations to these sources, industrial networks and safety groups become more desirable.

Table 5.4.1: Source of information on health and safety matters

Source of information	Enterprise size				Total
	1-9	10-49	50-249	250+	
Trade Unions	1	0	6	8	15
Head office	1	0	7	15	23
Local Authority	6	6	5	10	27
Industrial network/safety groups	6	8	32	38	84
HSE/Website	7	11	31	39	88
Health and safety journals	12	12	33	38	95

Although a substantial number of small and medium sized enterprises use the Health and Safety Executive (as well as its website) and Local Authorities as sources of information, the data presented on Table 5.4.1 above shows that the preference for the use of these sources, especially the HSE and its website, increases with enterprise size. This finding is in line with findings from literature which portray SMEs as having higher rates of accidents than larger enterprises (Nichols, 1995; Eurostat, 2000; Health and Safety Commission, 2001, European Commission, 2002). As such, there is a view that the standard of health and safety in smaller enterprises is considerably lower compared to their larger counterparts (Bibbings, 2003; Lansdown *et al.*, 2007)

The effect of this poor performance is an unlikelihood that businesses with poor health and safety standards/records would seek advice and help from those sources such as the Health and Safety Executive and Local Authorities, perceived as having regulatory, and or enforcement powers because out of fear of being punished (British Chamber of Commerce, 1995; Elliott *et al.*, 1996). In view of these sources (e.g. Health and Safety Executive or Local Authorities) are neither suitable nor effective channels of disseminating health and safety improvement to organisations, especially SMEs.

Even in the face of these limitations, it could still be argued that SMEs could rely on the information contained in the Health and Safety Executive's website (or information gateway) for help and advice on health and safety issues. While this argument seems compelling, Battenburg and Rutten (2003) as well as Bennett *et al.* (2001) however observe that a high volume gateway information service has a minimal impact on the intended recipients compared to an intensive advisory system governed by mutual agreement between the parties involved. This implies that the HSE website may not, after all, be the best way to influence improved health and safety performance in organisations, especially SME.

Even in the circumstance that these small and medium enterprises are able to access information on health and safety from the Health and Safety Executive's website, it is still doubtful if the small enterprise sector has enough resources (personnel and otherwise) capable of producing the level of impact obtainable through the use and application of information and communication technology (ICT) to solving everyday business problems. For instance, the Department of the Environment Transport and

the Regions (2000) observes that because these guidance materials failed to address the needs of businesses, there was a clear need to produce more sector specific guidance, perhaps with co-operation from professional representatives or trade bodies.

Again, in a survey carried out by Duan *et al.* (2002), an overwhelming majority (82%) of the respondents in the United Kingdom felt that they needed more training on the use of the internet. This shows that in as much as information on health and safety issues is readily available on the internet, it is still not considered the most effective means of disseminating health and safety information because so many people do not yet know how to effectively use ICT equipment and facilities. This view is substantiated by the result of a survey carried out by Chen *et al.* (2006) which shows that although both social and electronic networks were both important channels through which SMEs can acquire knowledge, there was, nonetheless, a preference for social networks with their key customers' or buying customers by organisations.

It is also evident from Table 5.3.1 that the use of Trade Unions as a source of information increases with size, such that a negligible number of respondents from micro and small businesses relied on trade unions for information on health and safety issues. This is also not surprising because the peculiar nature of SMEs does not encourage trade unionism. And within the context of this research, a study by Walters (1998) which notes a limited success achieved with this form of intervention, rules this out. As noted earlier, the Safety Representatives and Safety Committees Regulations 1977 (SRSC Regulations 1977) of The Health and Safety at Work Act 1974, allowed only organizations with organized trade unions to appoint health and safety representatives. As a result, trade unions or to some extent employee pressure

groups would not make the management of their organizations to consider any improvement in its health and safety standard or performance.

The reliance upon safety journals for information on health and safety, although cited by many as a source of information would also not be an effective medium. For this to achieve the desired result, the person using it should have a certain level of awareness of health and safety management. However, from Figure 5.4.1 below, it could be seen that many small and medium sized enterprises cited lack of knowledge of details and implications of health and safety legislation, as well as a complex health and safety legislation as major obstacles to the implementation of effective safety and health management systems in their organisations. Thus, it would still require a considerable level of outside help to these organisations for them to effectively interpret and utilise the information contained in these journals. The use of this source of information could also be affected by lack of resources (human, and or financial), which is also shown as a major constraint in Figure 5.4.1 below:

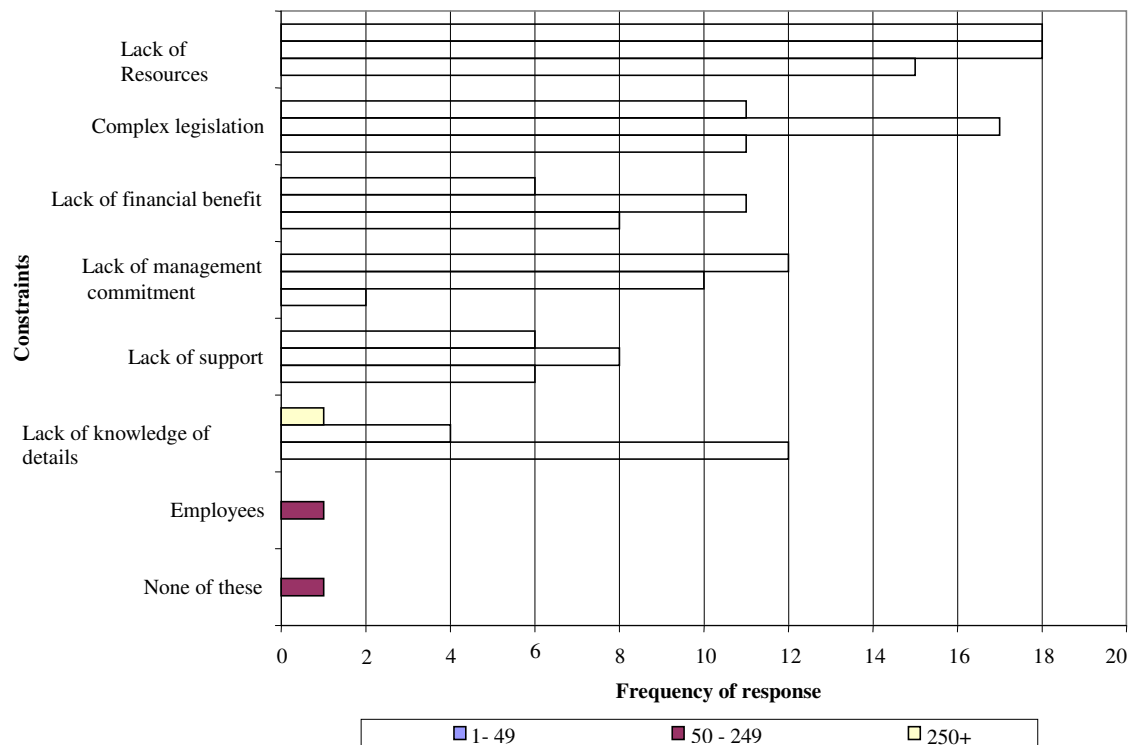


Figure 5.4.1: Constraints to health and safety management

This section has presented the various sources through which organisations can access relevant health and safety information. While the finding from this survey suggests that sources of information (in increasing order of preference) are industrial networks/safety groups, HSE/website, and health and safety journals, the limitations of these sources are such that the use of industrial network/safety group seems most effective. For instance, there is an argument that in order to engage SMEs to the level that would that guarantees that the level of improvement needed is achieved, there is a need to utilise those channels with which SMEs are already familiar with (Van de Ven, 1994; Walters and Lamm, 2004) should be used. Chen *et al.*, (2006) went further to note that SMEs regard social networks as channels through which they access important improvement information.

5.5 Involvement in supply chain network improvement related activities

The analysis in this section is to ascertain the influence of supply chain networks on the activities of organisations, as well as the extent to which organisations have benefited from these influences. The findings from these analyses will guide the researcher in the development of supply chain related improvement activities as well as in the evaluation of the framework developed. Some of the questions contained in this section were targeted at those organisations that have outsourced some of their operations or activities, while some others were targeted at suppliers or sub-contractors to whom these activities/operations have been to. The outcome of this analysis is thus a fair reflection of reality.

A breakdown of the responses by respondents when polled on their membership of networks, supply chain improvement groups, supplier assessment and evaluation, as well as support offered to their business associates with regards to health and safety issues are shown on Table 5.5.1.

Table 5.5.1: Major collaborative activities

	Yes	Total	% of Total
We rate health and safety performance as highly as cost	34	68	50.0
Interested in supply chain improvement initiative	56	102	54.9
Educate our suppliers through written materials	37	67	55.2
Part of industry specific partnership that shares good practice	68	111	61.3
We set health and safety criteria for our suppliers	44	67	65.7
Formal assessment of suppliers' health and safety performance	43	65	66.2
Informal assessment of suppliers' health and safety performance	46	67	68.7
Part of network that shares good practice	86	110	78.2
Health and safety performance forms part of our sub-contract conditions	59	68	86.8

A consideration of the data on Table 5.5.1 above alone could lead to an erroneous conclusion that many organisations either belonged to a network (group of organisations that are probably involved in the same activities or share the same customers) which encourages the exchange of best practices, or carried out activities aimed at improving the health and safety standards of their suppliers (or business associates). However, the data presented on Table 5.5.2 indicate that relatively fewer organisations than suggested actually carry out these activities that are capable of improving the performance of their suppliers or organisations in the supply chain. An inference that could be drawn from this is that the impression created by the data on Table 5.5.1, although representing the views of respondents, is misleading. It is highly suggested that the data presented on Table 5.5.1 should be interpreted in conjunction with the data on Table 5.5.2.

Table 5.5.2: Specific partnership improvement activities carried out by companies

	Yes	Total	% of Total
We go into our suppliers' companies to help them improve health and safety	16	68	23.5
Benefited from improvement workshops and education from customers	26	109	23.9
Run workshops/seminars to educate our suppliers	21	67	31.3
Part of supply chain initiative involved in active dialogue with suppliers /stakeholders	36	111	32.4
Have received guidance from customers	41	111	36.9
Interested in participation in supply chain improvement initiative	33	67	49.3
Communicate to suppliers our health and safety criteria for goods and services we buy	51	65	78.5

This discrepancy could, perhaps be explained by the fact that most companies are yet to be given the mandate to become involved in these networks and their activities by their parent companies. The conclusion arrived at by the researcher from his interviews with health and safety managers was that much as there was an agreed need for them to be more involved in their suppliers' health and safety management, in most cases there were no corporate mandate for them to do this. There was also an expressed fear that they could become liable for any lapse in their suppliers' health and safety, were they to offer any form of support or advice.

The essence of these findings becomes clearer when the data contained on Tables 5.5.1 and 5.5.2 are considered within the context of existing literature on collaborations and partnerships and the impact of these associations on the performances of organisations. A question that normally crops up in the minds of people is how can a network of organisations influence organisational performances? Aitken (1998) provided a partial answer to this question by noting that organisations belonging to a network work mutually and co-operatively together to control, manage and improve the delivery of services and products from suppliers to end users. An effective delivery of these services and products cannot be achieved if the more capable organisations are not willing to help the less capable organisations within the supply chain.

The effect of the performance of a member of a supply chain on the performance of the other members is alluded to in Smitka (1991), who observes that supplier associations or networks lead to increased efficiency and maintenance of trust in organisations. Horvath (2001) also notes that the competitiveness of organisations

was now dependent on the performance of supply chains and no longer on individual organisations. There are also observations that partnerships lead to the survival of organisations (Larson and Drexler, 1997; Battenburg and Rutten, 2003) by ensuring an access to complementary skills, economies of scale, risk sharing and access to knowledge (Powell, 1987; Clark and Fujimoto, 1991).

Thus, in order to benefit from the above, organisations must be engaged in those activities listed on Table 5.5.2 which, unfortunately as shown by the level of positive responses, leave much to be desired. Further inferences from literature on the importance of these activities are contained in Doz (1996) who views the acquisition and development of knowledge as determinants to successful business strategies. For this objective to be realised, there is need for regular meetings or workshops. These meetings increase the level and frequency of direct contact between stakeholders (Hines and Rich, 1998; Lippmann, 2002). However, these meetings and workshops will not produce the desired result if there is no meaningful and effective communication between organisations. Communication has been noted as playing a vital role in the sustenance of competitive advantage by organisations (Anderson and Narus, 1990; Morgan and Hunt, 1994; Aquilon, 1997; Department of Trade and Industry, 1998; Cook and Tyundall, 2001; Hutchison, 2003).

5.6 Motivators of good health and safety management in organisations

A list of factors, arranged in three levels of influence (small, moderate, and great), which respondents felt influenced the desire by their organisations to effectively manage health and safety in their businesses is shown on Table 5.6.1 below.

Table 5.6.1: Factors motivating health and safety management in businesses

Motivating Factors	Level of Influence (%)		
	Small	Moderate	Great
Pressure from suppliers	80.6	17.6	1.9
Pressure from trade unions	72.0	14.0	14.0
Pressure from shareholders or investors	56.8	28.4	14.8
Pressure employees	39.3	42.1	18.7
Requirement/encouragement from customers	39.3	34.8	25.9
Improve competitiveness	38.2	28.2	33.6
Reduce insurance premiums	25.5	31.8	42.7
Fear of prosecution	15.2	25.9	58.9
Reduce health and safety impact posed by company	12.0	23.1	64.8
Culture of organization	13.5	21.6	64.9
Management commitment	6.4	27.3	66.4
Influence of UK Health and safety legislation	8.3	22.2	69.4
Protection of company's image or reputation	8.0	22.3	69.6

Figure 5.6.2 below which is a further breakdown of these motivating factors shown on Table 5.6.1 above, shows that more respondents within the SME range felt that the influence of their customers motivated them more to improve their health and safety records than does regulatory influences.

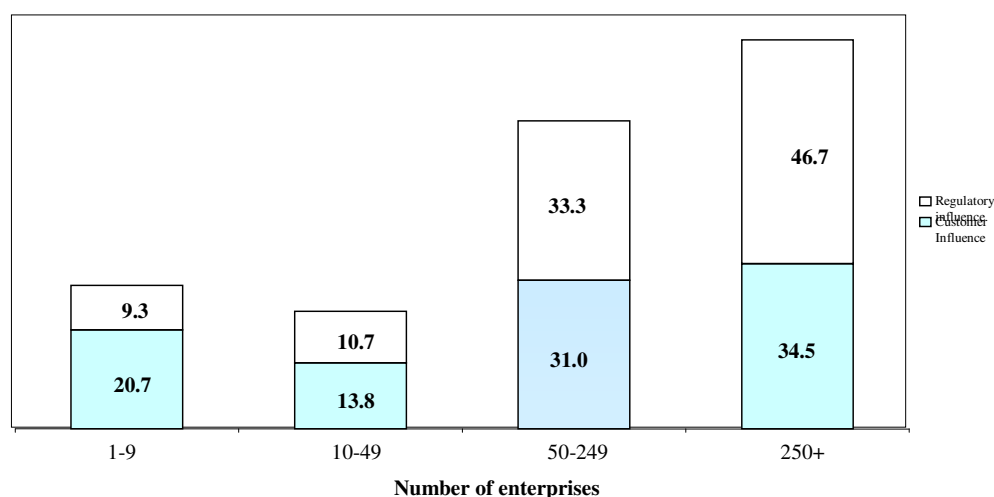


Figure 5.6.1: Influence of customers and regulations on health and safety management

The inference to be drawn from this is that customer requirements or demands have more impact on businesses than the implications of non-compliance with health and safety legislations. This finding is in line with conclusions drawn from earlier works (Gunningham and Sinclair, 2002; Holt and Kockelbergh, 2003; Redman *et al.*, 1995), on the influence of supply chain pressure on business improvement initiatives undertaken by business organisations.

5.7 Health and safety improvement through collaborations and partnerships

It was observed in Section 2.6 that it is only through the strengthening of organisational structures and practices, such as collaborations and partnerships, that an organisation can truly become proactive in managing health and safety (Zani and Riva, 1999). Thus, an organisation that is proactive in managing health and safety ensures that its image and operations are not affected adversely by the activities of its business associates. This is line with the findings from the research survey carried out which suggests that the protection of business image and operations are major reasons why most organisations take interest in health and safety issues both inside and outside their organisations (Section 5.3).

The responses given by respondents when polled on the percentage of time dedicated health and safety management in their respective organisations every week are shown on Table 5.7.1 below. It could be observed from the data presented that small organisations devote less of their working week time to health and safety activities than their larger counterparts. Thus, it could be concluded that the time dedicated to health and safety management, and by implication the importance attached to health and safety is a function of the size of an organisation.

Table 5.7.1: Percentage of time dedicated to health and safety management per week

	% of time per week	number of employees			Total
		1-49	50-249	250+	
Time dedicated to Health and Safety Management duties	0-9%	13	9	3	25
	10-49%	10	8	3	21
	50-89%	3	8	5	16
	90-100%	3	14	29	46
	Don't Know	0	0	1	1
Total		29	39	41	109

This observed relationship could have been caused by lack of resources, lack of management commitment, lack of perceived financial benefit, lack of knowledge of details et cetera (Figure 5.4.1, Section 5.4). The effects of these constraints would have been mitigated if these organisations were to seek help from relevant sources (such as the regulators or government establishments). However, many organisations especially SMEs do not use these sources because they do neither trust them, nor would they want to draw attention to their poor health and safety standards (Table 5.4.1, Section 5.4).

These findings also strengthen the need for organisations to engage in supply chain network activities shown on Tables 5.5.1 and 5.5.2. Subsequently, these large organisations must take interest in the health and safety affairs of their business associates if they were to protect themselves from the risks arising from their interactions with poor performing organisations. Thus, in line with the views expressed by Aitken (1998), it is recommended that organisations (especially large

ones) collaborate with their smaller counterparts, work mutually and co-operatively in order to control risks.

There are many reasons why organisations are advised and encouraged to embrace collaborative and partnership types of relationships as strategies or tools for improving health and safety standards. This is possible because long term collaborations among organisations lead to increased mutual trust (Beach *et al.*, 2005) as shown in Section 3.1.1. It is expected that with an increased level of trust, organisations would become more open about their health and safety problems, and seek help or advice from those outside their organisations. This would effectively reduce the effect(s) that the avoidance of regulators and government agencies by SMEs and poor performing organisations would have had on individual organisations and supply chains. Secondly, this would serve as an effective channel through which health and safety regulators and government agencies could reach/communicate with these hitherto hard to reach organisations. Again, it could be inferred from the discussions in Section 3.3 that because partnerships and collaborations lead to increased trust and mutual commitment (Dwyer and Tanner, 1999), collaborative relationships bring about sustainable improvements in performance (Liker and Wu, 2000). Also, these improvements resulting from collaborative relationships could be attributed to the fact the collaborations and mutual relationships create unparalleled opportunities for discussion such that those innate inhibitions to effective sharing of information and exchange of ideas are broken (Department of Trade and Industry, 2004).

It would be ill-advised for organisations to shun collaborative and partnership type of relationships and opt for the adversarial or market type relationships. First, collaborations and partnerships ensure that organisations benefit from the competencies [resources] of other organisations (Davis, 1993; Smith and Reinertsen, 1995). This assertion is relevant to every organisation, irrespective of standard of performance. In relation to those poor performing organisations, often with constraints to an effective health and safety management similar to those shown in Figure 5.4.1, which lead to results such as those shown on Table 5.7.1, it makes it possible for them to benefit from the resources and experiences of their associates with better standards. For those other organisations with better resources, they are reminded that it is neither possible that they would never need the services of another organisation to carry out some of their duties or work for them, nor can they survive without collaborating with other organisations because in the survival of the fittest market environment, inter-firm subcontracting offers a ready short cut to enhancing productivity and other non-price determinants of domestic and international competitiveness (Wattanapruittipaisan, 2002).

In the light of the discussion in this Section, it has been shown that the impact of collaborations and partnerships on the performance of organisations is substantial, and there is every indication that these practices would have the same effect on health and safety management. These impacts have been alluded to by observations that organisations prefer the use of social network with their key customers as channels for knowledge acquisition than to electronic networks (Chen *et al.*, 2006). Furthermore, while partnering remains the most significant method for improving performance of organisations and offers direct benefits to these organisations (Larson and Drexler,

1997; Fearne, 1998), collaboration offers substantial cost savings to organisations that have embraced it (Lee *et al.*, 2000; Section 3.3).

5.8 Summary of chapter

Empirical data from the research survey were presented and discussed in this chapter. The justifications for the steps taken during the data gathering stage were also provided. This was with a view to showing that the findings are valid, representative, and can be generalised to the entire study population. The results showed that a greater number of respondents were from the construction industry. This can be attributed to the high level of health and safety awareness creation activities in the construction industry, which has led to fewer inhibitions/scepticisms, such that many organisations seem more open about their health and safety problems than organisations in other sectors.

The views of respondents on some basic but important health and safety issues were explored. This helped to establish that poor health and safety standard has considerable impact on the image and operations of an organisation (Table 5.3.1). A statistical association among health and safety standard, image and operations of a business (Table 5.3.2) was also established. It could be concluded that larger organisations are conscious of this impact (Figure 5.3.1), such that the protection of image and operations from the effects of external risks has become a major motivation for many of these organisations manage health and safety adequately.

Although there are many avenues through which organisations can access information on health and safety matters, there was however a reluctance by organisations (especially SMEs) to approach health and safety regulators and government agencies for help. It was thus concluded that these organisations are afraid of being punished for poor health and safety performance. It was also established that lack of resources, lack of expertise, lack of management commitment, lack of perceived financial benefit, as well as complex legislations affect both the desire by, and ability of an organisation to improve on its health and safety standard. Despite these constraints, it was also established that while supply chain pressure was influential in bringing about improvements in organisations, it was practices such as collaborations and partnerships that enhance this. For instance, the result of the survey carried out suggests that substantial number of organisations rely on industrial networks for information and support on health and safety matters.

It could be concluded from the above results that the expressed desire by larger organisations to help their smaller business partners improve their safety performances should be capitalised on. Nonetheless, it is equally important that steps are taken to ensure that this goes beyond a mere expression of intent, such that activities capable of bringing about these desired improvements are identified, developed and implemented. These findings serve as further justification of the need to bring larger and smaller companies together in collaborative ventures aimed at improving their competitiveness. For instance, if larger organisations were concerned about their images and reputations, they are expected to show more willingness to help their less capable and resource handicapped smaller business partners improve their operations, as a way of forestalling any ugly situation. This is because the less

capable organisations (mostly smaller organisations) are more receptive to improvement ideas recommended to them, or demanded by their contracting partners. The finding presented in Table 5.7.1 on the length of time devoted to health and safety management in organisations (especially SMEs) suggests that a more concerted and non-antagonistic approach, such as the exploitation of the strengths inherent in collaborations and partnerships among organisations, be explored further.

In Chapter 6, these findings together with those from literature that were presented in Chapters 2 and 3 would be used as the basis for developing a conceptual framework that would help organisations to evaluate critically health and safety strategies in their supply chains. Of particular importance is the discussion and in Section 6.9, which recommends that critical factors which could enhance the success of the framework should be identified. Specifically, Table 6.9.1 contains cross-references to other sections of the thesis where collaborations and partnerships have been discussed. These management tools have not been explored in greater detail in the past as health and safety improvement tools. The effectiveness of the framework to be developed in the next Chapter is highly depended on the extent to which those factors that encourage the establishment and strengthening of these two supply chain tools are identified and utilised.

Chapter 6

Development and Testing of Framework

6.1 Introduction

There have been criticisms of outsourcing and other forms of supply chain relationships. These criticisms are based on the perceived increased susceptibility to health and safety risks inherent in such relationships by those organisations that have embraced it (Section 3.6). These criticisms notwithstanding, it is generally accepted that the principles of supply chain management, when applied correctly, leads to a more integrated and competitive organisations and supply chains. With this level of integration, the likelihood that a problem in one link would affect other parts of the supply chain becomes even greater. Therefore, merely focusing on improving the health and safety standard of individual organisations in a supply chain is no longer sufficient. It is subsequently argued that the probability of the importation of risks in supply chains can only be minimised through the use of a framework, which not only enables organisations to assess those risks to which they are susceptible, but also helps them in establishing mechanisms to protect themselves from the impact of these risks.

Thus, the evaluation framework proposed here has been informed by the need to protect organisations that have embraced outsourcing and other forms of business relationships (with other organisations in a supply chain) from the effects of these inherent health and safety risks (Section 2.6.6), of which the perceived impact on the performance of an organisation (Table 5.3.1) is an example. A description of this framework (with its elements) is contained in the sections below. The identification

of these elements was made possible by the literature review (Chapters 1 to 3), as well as the research survey (Chapter 5) carried out.

It is envisaged that the proposed framework will help in raising the awareness of workplace health and safety, co-ordination, and prioritisation of actions aimed at improving the infrastructure that supports improvements in workplace health and safety standards. The development of this framework is further is guided by the following principles:

- the focal point of any workplace health and safety activity should be on the prevention of accidents or the reduction in the frequency and fatality of illnesses and injuries
- meaningful improvements in the standard of workplace health and safety can only be made with the support and participation of all stakeholders
- a recognition that although the ultimate responsibility for maintenance of workplace health and safety is on employers, employees are also required to take responsibility for their own safety at work
- activities aimed at improving the standards of health and safety at work should be reasonable and feasible, as dictated by particular circumstances

It is not unusual to encounter pessimistic views about the “supposed” positive impact of adopting this strategy on the overall performance of an organisation. However, even from a purely financial point of view, the adoption of this strategy as a means of raising health and safety awareness, management, and standards in organisations, especially small and medium sized enterprises, is not an overly ambitious project. It will also be shown in the sections below that organisational performance (including

health and safety) could be influenced by supply chain mechanisms and practices. This view is partly informed by the notion that regulatory influences is no longer effective in bringing about the much desired improvement in workplace health and safety management, and by the fact that not all organisations have the level of resources needed to bring about the level of improvement desired or required. Furthermore, an underperformance in one section of the chain also affects other sections of the chain.

There are evidences that the performance of an organisation is directly linked to the environment within which it carries out its business (Section 4.9). This (performance-environment) relationship has prompted arguments that the existence of an enabling environment was a crucial factor not only in the understanding of, but also in the explanation of those forces that shape the character and performance of organisations. Hence, it is not out of place to argue that the environments within which they are located affect both the efficiency and effectiveness of organisations and individuals. As a result, the creation of an engendering environment has become a vital aspect of performance improvement strategies. In view of the foregoing observations, a proper understanding of those forces likely to facilitate or inhibit the performance of an organisation is necessary in any effort aimed at improving the performance of an organisation.

The sections below contain a description of the elements of the framework. The justifications for the inclusion of these elements in the framework have been shown through cross-references to other section of the thesis where these have been discussed.

6.2 Definition of an improvement aim

Organisations are increasingly being advised to use suitable frameworks to help them curtail threats posed by imported risks in supply chains (Section 3.6). The adoption of any framework, should however, start with a definition of the aim and intended outcome of the initiative. This process defines the reasons for the exercise and establishes the type of outcome desired by the organisation at the end of it. This is necessary because it is only by having a clear understanding of the problems faced by an organisation that one can adequately establish what it wants to achieve and how to achieve it. It also ensures that these needs are translated into an improvement aim or vision and subsequently integrated into the existing business needs and strategy. While an organisation may consider itself to have adopted a proactive safety and health management approach, it is worth noting that a safety management system cannot be judged effective if it does not include a clear definition of an occupational health and safety policy (Section 3.6.4). The inability to clearly establish outcome(s) expected at the end of an improvement initiative (determined by the aim of that initiative) is likely to affect the success of that initiative. On the other hand, it has been observed that having clear aim(s) and or objectives facilitates the acquisition of new skills and knowledge (Section 2.6). Furthermore, confusion in the aims/objectives of an initiative often leads to an inability to customise or adapt existing management systems to become compatible with these objectives - a situation which is considered to be a major cause of the failure of many management systems (Section 2.5).

It is evident from the results of the research survey (shown on Table 5.1.2) carried out that organisations are eager to protect their reputation (image) and operations from the

effects of poor health and safety performance. Therefore, it would not be out of place for an organisation to have as its improvement aim, the assessment and identification of ways to improve its relationship with its suppliers and sub-contractors, with a view to raising the health and safety standards of these organisations.

There are many reasons why an organisation which relies on other organisations to undertake some or part of its operations is encouraged to show more interest, and become involved in the health and safety affairs of its suppliers and contractors. First, the provision of a safe, healthy and conducive work environment helps an organisation to avoid cost that may result from injury, ill health or damages in any of its work premises (Section 1.1). Secondly, although these contracting organisations often maintain reasonably good health and standards, they tend to ignore the fact that any disruption in the operations of any of its suppliers or contractors is bound to affect not only its operations, but that of the entire supply chain (Appendix M, which describes the effect of a fire outbreak in a suppliers premises on the operations of Ericson).

Thus, the adoption and implementation of good management principles (health and safety in this instance), has a cascaded positive effect on the performance of other organisations in an entire supply chain (Section 3.1.1). Again, larger organisations invariably suffer from the effects of poor health and safety performance of their suppliers/contractors a majority of which are small businesses (Section 1.1). It can also be inferred from the discussion in Section 3.7.1 that an organisation is not only susceptible to the effects of health and safety risks arising from its internal process, but also to other risks associated with its interaction with its business associates. As

such, it would be insufficient to concentrate on improving internal capabilities. This clearly justifies why the improvement in supply chain health and safety capability would be a very good aim.

Table 6.2.1: Justification for definition of an improvement aim

Proposed framework element	Explanation and citations
Define aim	<ol style="list-style-type: none"> 1. Explains what the organisation wants to achieve by embarking on an improvement initiative. 2. It is only by having a clear aim (or vision) that the management of an organisation can adequately ensure the integration of these needs into the existing business needs and strategy 3. Organisations should use frameworks to curtail threats posed by imported risks in supply chains (Wolfson, 1996) (Section 2.5) 4. The inability to customise these to suit the needs of the organisation leads to failure of management systems (Gallagher et al., 2001)(Section 2.5) 5. Effective safety management system must include a clear definition of occupational health and safety policy (Quinlan and Bohle, 1991) (Section 2.5.1) 6. A good aim could be to improve health and safety performance of organisation in a supply chain based on the survey finding shown in Table 5.1.2. Also, failure to provide safe and conducive environment leads to cost (Health and Safety Executive, 2003(a); Eurostat, 2002; Pickvance, 2003, Institution of Occupational Safety and Health, 2001) (Section 1.1). Again, there is low health and safety standards in SMEs (Lefebvre and Rocklin, 1997, California State Committee on Industrial Relations, 1992; Health and Safety Commission, 2001) and many of these are used by larger companies (Section 1.1). This is further justified by the observation that the maintenance of a good health and safety standard is beneficial to organisations (European Agency for Health and Safety at Work, 1999 and 2002; Elgstrand, 1985; Confederation of British Industry, 1990; Benjamin and White, 2003) (Section 3.1.1)

6.3 Identification of suitable improvement mechanism

It has already been noted in Section 6.2 that the choice of an improvement mechanism should be determined and guided by what an organisation intends to achieve. The supply chain, in the researcher's view, seems the most cost effective and efficient mechanism through which organisations can achieve substantial improvements in their health and safety standards. This view has been informed by both legal and operational considerations. Although it could be argued that the best improvement

strategy does not necessarily have to rely on supply chain influences, there are however very compelling reasons/arguments why this has to be tried.

The choice of a suitable mechanism is particularly important as organisations are set in particular environments to which they are inextricably linked, and which provide multiple contexts that affect their performances, their products/services, and how they operate (Section 4.9). Thus, improvements to existing business systems or indeed the development of new ones are usually in response to either external or internal needs or pressure.

There are several factors that can force organisations to embark on health and safety improvement initiatives. Among these factors, customer pressure and regulatory requirements seem to have more impact on the desire by organisations to establish health and safety management systems. Between these two factors, there are empirical evidences that pressures from customers serve as greater motivations for smaller organisations to undertake improvement activities than regulatory requirements (survey findings shown in Figure 5.6.1). Thus, the use of supply chain pressure serves as both a route and an opportunity for larger companies and regulators to encourage (or induce) smaller organisations into better health and safety management. The impact of this opportunity can become meaningful only if these improvement initiatives have been carefully planned and implemented. A further reference to the impact of supply chain pressure in shaping organisational practices were made in Section 3.3, where it was observed that supply chains not only facilitate changes but also present firms with opportunities to establish competitive

advantages. Similar views about this influence could be found in Sections 2.5.2, 3.7, and 5.6.

There are also several reasons why organisations are advised and encouraged to take more interest in health and safety standards within their supply chains. First, there is an obvious need to forestall the negative impact of a business associate's poor health safety standard on the image and operations of an organisation as observed by respondents to the research survey (Tables 5.3.1 and 5.3.2, and Figure 5.3.1). Equally as important and compelling as the above is the need to extend help to SMEs. This is in view of the evidence that smaller organisations experience far greater difficulties in tackling health and safety issues than their larger counterparts (Section 1.1). Some of the difficulties, which respondents felt affected their ability to efficiently manage health and safety in their organisations, are shown in Figure 5.4.1. In view of this, it seems as though many organisations fail to adhere to the HSW Act 1974 requirement that everyone in a workplace (customers, contractors, suppliers, etc) take due responsibility for the maintenance of a conducive, safe and healthy work environment (Section 2.2).

The realisation that a problem in one link of a supply chain is likely to affect an organisation's performance may have influenced the advice to organisations not to focus only on those risks directly associated with their operations/activities, but also on the risks in the other links of the supply chain, because the success of an organisation depends, to a large extent, on its ability to adapt its strategy to suit prevailing needs (Section 2.5). Subsequently, there is bound to be improvements in both the competitiveness and profitability of an organisation, if upon realising the

importance of its supply chain to its business operations, it takes adequate steps to manage its supply functions more efficiently (Section 3.1.1).

The inclusion of this element in the framework has been influenced by the observation that in the past, initiatives which did not utilise supply chain influences were considered both ineffective and inappropriate to the needs of SMEs. Subsequently, there have been calls that other approaches, such as utilising supply chain influences, should be tried (Section 1.1). While this approach seems an unnecessary diversion of scarce funds/resources into areas with little or no impact on an organisation's performance, the argument that improvement in supply chain performance provides longer-term advantage than other forms of advantages (Section 3.7) is a tangible and strong one. Although the extent to which the performance of an organisation is affected by supply chain influences could be questioned, Section 3.4 however showed that belonging to a supplier association could lead to better performances and higher efficiencies in individual member organisations. Additionally, these associations not only help to improve the abilities and skills of suppliers, but also facilitate the flow of information, and increase the level of trust among business associates. There are further suggestions that because many SMEs are often reluctant to seek advice from regulators/government agencies for the fear of being punished in cases of poor performance (Section 1.1). There is therefore a need that other strategies which encourage compliance through persuasion and co-operation should be used as they are more effective than those based on enforcement (Section 3.8.1). Subsequently, there is a need to utilise those channels, such as supply chains and business networks, which SMEs are familiar with and trust (Section 5.4). Furthermore, the adoption of a proactive risk approach to health and safety

management requires the integration and strengthening of all organisational structures and practices such as the level of collaboration among organisations (Section 2.5).

Table 6.3.1: Justification for including choosing a mechanism in the framework

Proposed framework element	Explanation and citations
Choose mechanism	<p>The aim of this is to determine the best method to achieve the identified aim(s). For instance, tasking all suppliers and sub-contractors in a given project site to proactively management health and safety, and ensuring the availability of resources (time and personnel) to help in achieving the aims</p> <ol style="list-style-type: none"> 1. Earlier initiatives that did not utilise supply chain influences were not very effective (Walker and Tait, 2004; Bibbings, 2003), were inappropriate to the needs of SMEs (Rhodes and Carter, 2003) such that SMEs still faced greater challenges than larger organisations in tackling health and safety issues (Stokols <i>et al.</i>, 2001), and as such there is need to try new approaches based on supply chain mechanisms (Wright, 1998). (Section 1.1) 2. In view of evidence that problems in one link of a supply chain will affect other links (Svensson, 2000; Christopher <i>et al.</i>, 2002), any effort put in any link is not wasted and organisations are advised to focus not only on their own risks but also on the risks in other links in the supply chain (Souter 2000). This is especially as the success of organisations depends on their abilities to adapt their prevailing strategy to suit prevailing competitive environment (Porter, 1980) (Section 3.6) 3. Improvements in supply chain performance provide a longer term advantage than other forms of advantage (Section 3.7) 4. Supplier associations lead to higher performance (Rich and Hines, 1997) and efficiency (Smitka, 1991). Additionally, they help in improving the abilities and skills of suppliers, facilitate the flow of information, increase trust buyer and suppliers allowing for closer business relationships, help smaller suppliers lacking specialist trainers, provide an example to subcontractors on how to coordinate and develop their own suppliers (Hines, 1994) (Section 3.4). 5. The ability to manage supply functions adequately lead to great competitiveness and profitability (Handfield <i>et al.</i>, 1999) (Section 3.1.1) 6. The health and safety at work act 1974 demands that every one in a work place takes responsibility for that maintenance (Stranks, 2000) (Section 2.2) 7. Strategies which encourage compliance through persuasion and co-operation are more effective than those based on enforcement (Hawkins, 1990, European Network for Workplace Health Promotion, 2001) (Section 3.8.1) 8. The achievement of a proactive risk approach to health and safety management requires the integration and strengthening of organisational structures (Zani and Riva, 1999), including the level of collaboration among organisations (Section 2.5)

6.4 Identification of target(s) in need of intervention/choice of partners

The identification of the target in need of intervention or help is advisable for several reasons. The first is to ensure that the intervention or help is targeted at those

individuals or organisations that actually need these and would benefit from such interventions. Secondly, while it may be desirable to establish deep-rooted relationships/collaborations with every member of a supply chain, organisations are however advised to establish this level of relationships with their key supply chain members only. This advice is in recognition of the cost involved in establishing and maintaining these relationships (Sections 2.5 and 3.3.1). Furthermore, organisations often cite lack of resources as a factor affecting better health and safety management (Section 1.1; Figure 4.4.1). In view of the above, the following questions should guide the process of choosing whom the improvement initiative should be directed at. Of what strategic importance is the intended target (suppliers, contractors, or internal departments) to the operations of the business? What is its level of performance? What level of risks is it exposed to, or does it pose to the operations/activities of my business? (Figure 3.6.1) Other factors that may influence the choice of a target for intervention include the cost of implementation (Section 3.3.1), as well as the willingness by the organisation to participate and contribute to the programme of activities (Section 3.4.2). This particular step is necessary because a robust procedure for selection of partners helps in the reduction of risks inherent in such relationships and activities (including health and safety) faced by an organisation.

It is further acknowledged that there may be a natural inclination by an organisation to target only those suppliers/contractors/employees whose products or services are strategic to its operations. Much as this inclination is appreciated, it is recommended that any planned improvement initiative should also include those other organisations/individuals (strategic or not) in the chain whose performances are below standard. This view is informed by the fact that any disruption in any part of the

supply chain could create a ripple effect capable of disrupting the operations of the entire supply chain. It is also guided by the answer to the question of the level of risks that the organisation may be exposed to, or if it poses any risks to the operations/activities of the business.

6.4.1 Strategic and high spend individuals and organisations

The need to ensure that the operations and or the reputation of an organisation are not affected by disruptions in the activities of its business associates as a result of accidents and ill health cannot be overemphasised (this need was shown in Section 3.6). These types of disruption (and indeed any other type) always have far reaching effects on an organisation, as it has been observed that more than half of annual sales turn over in many organisations is spent on purchased materials and services (Section 3.6).

It was also noted in Appendix M that the inability of a strategic supplier to supply materials or services as a result of disruptions in its operations caused by accident or ill health could have a considerable impact on the operations of a contracting customer. The need for an efficient management of an organisation's customers was also highlighted by the observation that the inability of an organisation to efficiently manage its source of materials and services has a significant effect on its organizational competitiveness and profitability (Section 3.6). The discussions in Section 3.3 also suggest that the chances of the importation of health and safety risks from other organisations were higher in organisations that neglected their strategic customers.

6.4.2 Stagnant performers/many problems

Quite often, lack of resources force organisations to concentrate on improving only the performance of under performing strategic and high spend stakeholders. Although this decision is understandable, it is however advised that any assistance aimed at improving organisational capability or performance should also be extended to those other organisations (strategic and non-strategic) whose performances are below standard. While the scepticism about the use of supply chain influences to improve performance is recognised here, it is still maintained that supply chain management principles, when applied correctly, have been shown to be major facilitators of change (Section 3.3). Thus, these principles can also be used to initiate both the attitude and mindset needed to influence better performance in organisations as well as individuals.

A perceived lack of benefit (financial or otherwise) from participating in supply chain activities is one reason why some organisations are reluctant to join supplier associations. Organisations (especially large ones) with established health and safety management systems are, nonetheless, encouraged to help under performing organisations in their supply chains to improve. This is because the ability to adequately manage ones supply functions also lead to increased competitive ability and profitability (Section 3.1.1). The under performing organisations are reminded that activities undertaken in supplier associations not only lead to higher performances (Sections 3.3 and 3.4), but also to improved efficiency (Section 3.4) in organisations. These levels of improvements are not surprising because supply chains are credited as being able to provide an organisation with opportunities to attain competitive advantages as a result of improved organisational capabilities (Section

3.3), abilities and skills because of greater access to needed resources, improved trust and communications amongst organisations (Section 3.4).

Table 6.4.1: Selected citations justifying the inclusion of identification of target

Proposed framework element	Explanation and citations
Identify target	<p>Due to resource constraints, this ensures that improvement initiatives are not only directed at those people or organisations that need it, but are also receptive to it.</p> <ol style="list-style-type: none"> Strategic and high spend: <ul style="list-style-type: none"> The neglect of strategic customers lead to higher chances of risk importation (Gadde and Snehota, 2000) (Section 3.3) Organisations establish partnerships with some members of its supply chain and not all due to cost involved in such (Mentzer <i>et al.</i>, 2000) (Section 3.3.1) Organisations bring their most important subcontractors together on a regular basis in order to find solutions to mutual problems (Hines, 1994) (Section 3.4) There is need to ensure that the business activities of companies are not affected by disruptions in the premises of its suppliers. This will have far reaching implication on the organisation in question bearing in mind that companies spend more than half of its annual sales turn over in purchasing materials and services from suppliers (Lo and Yeung, 2004). Furthermore, a failure by organisations to manage efficiently its source of materials and services will significantly affect its organizational competitiveness and profitability (Weber <i>et al.</i>, 1991) (Section 3.6) The inability of a strategic supplier to supply materials or services as a result of disruptions in its operations caused by accident or ill health can have a far reaching effect on the operations of a contracting customer as shown in Norman and Jansson (2004) (Appendix M) Stagnant performers/many problems: <ul style="list-style-type: none"> A supply chain as major a facilitator of change (Long and Arnold, 1995) is capable of initiating an attitude needed to influence better performance (Section 3.3). Supply chains provide organisations with opportunities to attain competitive advantages (Mohr and Spekman, 1994) (Section 3.3). It is also a way to improve performance (Fearne, 1998; Ellram and Cooper, 1990) It also leads to improvement in organisational capabilities (Clark, 1989; Department of Trade and Industry, 2004; Ragatz <i>et al.</i>, 1997) (Section 3.3)

6.5 Seek support and commitment from stakeholders

The next activity is concerned with the need to gain the support of, and commitment from stakeholders (both management and employees). It is vital that any improvement initiative should be acceptable to all stakeholders. This is because of evidences, which suggest that the success of any initiative is greatly affected by a lack

of overall acceptance, by stakeholders, of its planned activities. There are also views that the long-term success of any organisation is a function of the extent to which the needs and requirements of the various stakeholders can be integrated and balanced, without permanently or completely sacrificing any one for the other (Section 2.5).

The Health and Safety Act 1974 imposes the responsibility for the maintenance of health and safety in a workplace on every one who is connected to that place (Section 2.5). This shared responsibility will however become illusive if there is little or no support from stakeholders. This support or commitment is only noticeable in situations where prospective partners have not only agreed to work in a co-operative way, but have subsequently gone ahead to establish partnership relationships with each other (Section 3.3). However, the success of this co-operation is highly dependent on the level of commitment and support of the senior management of the organisation. This observation is also confirmed by the findings from the survey carried out as part of this research which suggest that lack of management commitment and support are among those factors that affect an organisation's ability to adequately manage health and safety (Section 5.4, Figure 5.4.1). The importance of gaining the support of stakeholders is further highlighted in Section 2.5, where it was observed that the safety performance of an organisation is dependent on the activities of those who design, manage, and operate the organisation. It was further observed that improvement in health and safety standards is usually a long term challenge that needs not only the involvement of, but also a commitment by all, such that the imposition of this initiative on stakeholders without proper consultation is likely to weaken their commitment and participation (Section 2.5).

In addition to gaining the support of potential partners, there is also a need to gain the support of their management and employees of these organisations. This is because the success or otherwise of initiatives undertaken by any organisation is dependent on the level of acceptance, commitment, and support by both management and employees (Section 2.5). Again, accident prevention strategies are less likely to be successful in organisations where strong management support and commitment are lacking (Section 2.5.1). The importance of this has been discussed earlier in Section 2.5, where it was noted that improvements in health and safety standards and performances are long-term challenges that required the awareness, involvement and commitment of all personnel. The observation in Section 2.5.1 that a successful accident prevention strategy is based on both a strong management commitment and active employee participation was substantiated by the finding from a survey carried out by the researcher, which shows that respondents regarded lack of management commitment as a major constraint to health and safety management in their organisations (Figure 5.4.1).

The level of management commitment is most likely to be affected by a perceived lack of financial benefit as a result of maintaining a good health and safety record. The outcome of a research referred to in Section 3.6 suggests that the way in which the upper management of an organisation perceives health and safety management affects the organisation's safety performance. In addition to a strong internal management commitment to health and safety improvement initiatives, it is also essential that employees show commitment to these improvement initiatives. Although it has been variously observed that lack of commitment by the senior management of an organisation is often to blame for an organisation's poor health and

safety performance, employees' attitudes to health and safety issues also play major roles in an organisation's safety performance (Section 2.5). A typical instance is the suggestion/observation that in certain cases, employees refuse to abide by an organisation's safety rules as laid down by the management (Section 2.5). Thus, concentrating or insisting only on obtaining management's commitment to health and safety programmes would not significantly change the embedded safety culture of an organisation. Equally as important as this is a tangible demonstration of commitment by employees to these.

Table 6.5.1: Justification for seeking stakeholders' support and commitment

Proposed framework element	Explanation and citations
Seek support and commitment	<p>Potential partners:</p> <ul style="list-style-type: none"> Safety performance is dependent on the activities of people who design, manage, and operate and organisation (Santos-Reyes and Beard, 2002) (Section 2.5) Subsequently, the health and safety at work act 1974 demands that every one in a work place take responsibility for the maintenance good health and safety (Stranks, 2000) (Section 2.4) This is because improvement in health and safety standard is a long term challenge that needs the involvement and commitment of all (Civil Aviation Safety Authority, 2003), such that the imposition of any initiative on stakeholders without prior consultation is likely to weaken their commitment and participation (Gallager <i>et al.</i>, 2001) (Section 2.5) Imposition is detrimental to any meaningful collaboration because a move towards partnering is dependent upon the intending partners working in a co-operative way (Boddy <i>et al.</i>, 2000) (Section 3.3) <p>Management and employees</p> <ul style="list-style-type: none"> There is need to gain the support of both management and employees as it has been shown that the success or otherwise of initiatives in organisations is dependent on the level of commitment and support from management and employees (Taylor, 2006; Harper and Koehn, 1998; Holmes, 1999; Dejoy, 1985; Jaselskis, 1996) (Section 2.5) Successful accident prevention strategies are based the support of good management (Gilkey <i>et al.</i>, 2003), which is largely dependent on strong management commitment (European Agency for Health and Safety at Work, 2001) (Section 2.5.1) Lack of management commitment as well as lack of support has being empirically shown in this research (Figure 5.4.1) to be among those factors which respondents to the research survey felt affected better health and safety management in their organisations (Section 5.4)

6.6 Assess needs and capabilities

A needs assessment is generally used to establish the current level of performance, compared to an ideal situation. This process, which includes the assessment of health and safety risks as well gaps in performance, is recognised as a good approach to safety management (Section 2.5.1). The assessment of needs and capabilities has been included in the framework because it helps the assessors to identify and prioritise the needs of the stakeholders. This ensures that an effective implementation plan, outlining how these identified needs would be addressed in order of importance, is put in place. It also ensures that the required type and level of services are both available and easily accessible to those who need it, when and where these are needed.

Again, carrying out a needs assessment ensures that a better picture of underlying causes of poor performance is obtained. This element is also essential because the implementation of mere structural changes in organisations is no longer capable of delivering the desired level of improvements in performance needed (Section 3.3). And it is only through a needs assessment that factors such as the embedded beliefs and attitudes (culture) of an organisation that have contributed to its poor performance can be identified and adequate steps taken to eradicate or minimise the impact of these (Section 3.3). The identification of these factors and especially the re-alignment of these embedded culture and attitudes which lead to poor performance can only be possible if the assessment team is made up of assessors who are familiar with the needs of the target (Section 2.5.1). A proper constitution of the assessment team brings about a sense of belonging. This goes along way in maintaining the interest, commitment and support of the various management boards. The proper selection of

team members implies an adequate involvement and participation of all stakeholders in the initiative. The importance of a proper team selection and constitution is contained in the observation that the imposition of an initiative without due consultation usually weakens senior management commitment and leads to poor employee participation (Section 2.5). Therefore, for a safety management system to actually succeed in improving the health and safety standard in an organisation, it should be adapted to suit the particular circumstances of the target organisation (Section 2.5).

Table 6.6.1: Citations justifying the need for capability and needs assessment

Proposed framework element	Explanation and citations
Assess needs and capabilities	<p>An assessment of the needs as well as the capabilities of individual organisations or personnel is needed to ensure the provision of a targeted programme of improvement and support. This is done by measuring the extent and nature of the needs of a particular target population, with a view to providing services that can satisfy them (Hooper, 1999).</p> <ol style="list-style-type: none"> 1. A structured approach to management ensures that risks are fully assessed and that safe methods of work are introduced and followed (European Agency for Health and Safety at Work, 2001). Needs assessment, usually carried out during a “gap analysis” helps organisations to identify current situations and ideal situations ((Rouda and Kusy, 1995; Stout, 1995). When this assessment is undertaken by those who are conversant with the needs of the target (Hooper and Longworth, 2002), it not only identifies the needs, but also the causes of poor performance (CEP, 2006) (Section 2.5.1) 2. A partnering strategy can only be effective if there is a re-alignment of the cultures of the parties involved (Hardy, 1996); and this is made possible only by assessing and understanding the current situation in that organisation. A proper needs assessment is important because it has been observed that structural changes do not bring about desired improvement in performance (Le Grand <i>et al.</i>, 1998; Shortell <i>et al.</i>, 1998). As such improvement in performance can only be achieved if structural changes is implemented alongside cultural transformations (Scot <i>et al.</i>, 2003) (Section 3.3) 3. For safety management systems to help in the improvement of health and safety standards of organisations, they should be adapted to suit the particular circumstances of organisations (Heinrich, 1959; OECD, 1999). Imposition of initiatives aimed at addressing the needs of all stakeholders, without a proper consultation with the parties involved not only weakens senior management commitment, but also leads to poor employee participation (Gallagher <i>et al.</i>, 2001) (Section 2.5)

6.7 Establishment of implementation team and selection of team members

The establishment of an appropriate implementation team is crucial to the successful implementation of any identified improvement activity. The members of this team are chosen to reflect different professional and organisational interests to ensure that balanced views on matters are maintained at all times. The establishment of strategic interface teams is an important aspect of any partnership implementation strategy (Figure 3.3.1). Furthermore, the ability of an organisation to involve its suppliers in its project activities is adjudged crucial to the success of collaborative relationships (Section 3.3). Even though it is recognised that lack of cross-functional involvement affects the development and sustenance of supply chain initiatives (Section 3.4.2), this recognition should not be to the extent that factors such as the willingness of individuals or organisations to be part of an initiative (a pre-requisites of success) should be overlooked.

There is an observation that improvement in the performance of an organisation is heavily reliant on the extent to which knowledge can be transferred from those organisations with good management and practices, to those other ones without (Section 3.7). This transfer of knowledge cannot be possible if those organisations with the capability and resources are neither willing impart this knowledge nor to participate in improvement initiatives. Equally as important as the willingness by stakeholders to participate in an initiative, is the recognition that transfer of knowledge (or learning) is highly dependent on the establishment of inter-organisational team(s), with members drawn from the various organisations that are involved in an initiative. This implementation team facilitates a perfect blending of skills from the various organisations into a strategic and significant capability.

It is very important that members of this inter-organisational and cross-functional team are confident and capable of commanding the trust and respect of the other members. Ultimately, a team member should be open to new ideas and be willing to accept that maintaining the status quo of nonchalant attitude to health and safety management often affects the attainment of a desired standard of performance. It is equally important that team members exhibit a positive attitude towards new approaches to health and safety management at all times. Thus, a critical assessment of the strengths that each team member would bring to the team and how the person would contribute effectively to the success of the team is an important process while setting up a health and safety improvement team. An individual's ability to contribute effectively to the success of any team is determined by how knowledgeable (i.e. experience and problem-solving ability) that person is about the subject (issue) at stake. This is also determined by the person's her teamwork qualities (openness, supportiveness, willingness to take part in activities, and positive personality).

Table 6.7.1: Citations justifying establishing an implementation team

Proposed framework element	Explanation and citations
Establish implementation team	<p>An implementation teams ensure s that activities are implemented as planned. Members should have varying professional backgrounds and coming from different organisations making up the supply chain.</p> <ol style="list-style-type: none"> 1. The involvement of suppliers in project activities of its customer is crucial to the success of collaborative relationships (Ragatz <i>et al.</i>, 1997). And the existence of a strategic interface team is an important aspect of any partnership implementation strategy (Figure 3.3.1), (Section 3.3) 2. Lack of cross-functional involvement affects development and sustenance of supply chain initiatives (Hines and Rich, 1998). However, it is advised that only those who are in support of collaboration should be selected (Section 3.4.2) 3. The process of improving the performance of an organisation relies on the extent to which knowledge can be transferred from capable organisations to less capable ones. However, this transfer of knowledge (or learning) is dependent on the establishment of inter-organisational teams with members selected from the customer as well as suppliers (Chen, 1999). This team ensures a perfect blending of individual skills into a strategic and significant capability (Monczka and Trent, 1993) (Section 3.7)

6.8 Allocation of responsibilities

This element of the framework ensures that responsibility for the execution of an implementation plan resides with known individuals or group(s) as a way of improving accountability. Also, by minimising or reducing the level of confusions associated with the assignment of duties, this element ensures that tasks are carried out as specified and to schedule (Appendix M).

The success of a team does not depend only on a proper selection of team members, but also on the correct allocation of roles and responsibilities. The assignment of clearly defined roles and responsibilities to team members is essential if a coherent health and safety management strategy that is capable of bridging the gaps in performance (as identified in Section 6.2) were to be developed and implemented. It is pertinent to note that strong management commitment and good employee involvement, while essential in any accident prevention strategy, are not in themselves enough to ensure the success of that strategy. Another element, a well-structured management system (Section 2.5.1) is needed for success to be achieved. This element specifies responsibilities, practices, procedures, processes and resources required to determine, and implement accident prevention policies (Section 2.5). A safety management system has been shown to be effective only in circumstances where there have been clear definition and allocation of responsibilities (Section 2.5.1).

An organisational structure, by specifying responsibilities and the relationships among these, ensures the promotion of, and implementation of health and safety policies in an organisation. This is thus recognised as an important element of a health and

safety management system (Section 2.5.1). This recognition may have been informed by the realisation that it is only in an environment where there are clearly defined responsibilities that a proper exercise of control (generally recognised as a fundamental aspect of supply chain management) can be achieved (Section 3.6). Subsequently, each team member should have clearly defined responsibilities, consistent with that person's experience and personality for an effective implementation of the framework activities.

The establishment of these roles and responsibilities makes assignments simple and ensures that tasks are completed within allocated budget and time schedule. An appropriate allocation of responsibilities can be achieved in four simple steps. The first step breaks down those goals to be achieved into specific, individual tasks and lists them in order of importance/priority. The second step ensures that a proper analysis of the competencies required to perform each task is carried out. The third step ensures that required competencies are identified. The fourth step ensures that these identified competencies are matched against individual team member based on their attributes or qualities

Another aspect of this element is the choice of a co-ordinator or team leader. The presence of a good co-ordinator or team leader enhances learning in supply chains (Section 3.7). A leader or co-ordinator could either be at company or team level. At a company level, a leading partner, normally the customer (contracting organisation) is made the co-ordinator. In most cases, there may not be a need to choose a co-ordinator formally because the company that started the initiative naturally assumes this role. Closely related to this is the choice of a leader for the implementation team.

While it would have been suggested that the leader comes from the company that started the programme, the fact that the programme has the support of and commitment from all stakeholders, makes it easier to choose a person who may be better suited for this job from any of the other organisation, and not just from the contracting form. This is particularly important because the success of the initiative is not dependent on the availability of resources alone but also on the ability to achieve desired outcomes using these resources. A proper and effective allocation of resources can only be achieved if there is a good leader.

It is also not enough to appoint a leading partner as a coordinator, equally important is the ability of the co-ordinator to communicate and make appropriate decisions (Section 3.7). The existence of an appropriate leadership is important as it helps to change the cognitive uneasiness about the status and relationships of participants, and also ensures that any improvement achieved is duly acknowledged and rewarded. The importance of this was also observed in Section 3.4.2. These qualities promote the development and implementation of knowledge sharing activities in an environment that is made up of different organisations with different cultures.

Table 6.8.1: Citations justifying inclusion of allocation of responsibilities

Proposed framework element	Explanation and citations
Allocation of responsibilities	<ol style="list-style-type: none"> 1. An important element of a health and safety management system is the establishment of an organisational structure (International Labour Office, 2001), which details responsibilities and relationships necessary to promote and ensure the implementation of a health and safety policy (Health and Safety Executive, 1997(b)). Furthermore, an implementation team can only be effective if there is a proper management control (Health and Safety Executive, 1997(b)). Also, in Quinlan and Bohle (1991), it was noted that strategy for the implementation of a safety management system must include a clear definition of health and safety responsibilities for all employees (Section 2.5.1) 2. A proper exercise of control is a fundamental aspect of supply chain management (Lamming, 1996) (Section 3.6) and the success of collaborations in supply chains is affected by the level of coordination (Mohr and Spekman, 1994) (Section 3.3) 3. Again, the level as well as the type of relationship among organisations are determinants to success of initiatives jointly undertaken by them (Schien, 1985; Scott, <i>et al.</i>, 2003(b)) (Section 3.4.2) 4. A safety management system includes an organisational structure detailing responsibilities, practices, procedures, processes and resources for determining and implementing accident prevention policies (European Union, 1997) (Section 2.5) 5. The allocation of responsibilities ensures that assignments are carried out as specified and to schedule. It is also necessary in order to avoid any confusion that may arise from job allocation (Norman and Jansson, 2004) (Appendix M) 6. It has been observed that learning in supply chains is enhanced only when a leading partner acts as a coordinator (Gereffi, 1995). However, it is not enough that a leading partner acts as a coordinator. Equally important is the coordinator's ability to communicate and make decisions as these promote the development and implementation of knowledge sharing in environments made up of different organisations having different cultures (Lehaney, 1999) (Section 3.7) 7. Successful accident prevention strategy does not depend only on strong management commitment and good employee involvement; it also depends on a well-structured management system (European Agency for Health and Safety at Work, 2001). However, a structured system is only possible where there is a clear definition of and allocation of responsibilities (Section 2.5.1)

6.9 Utilisation of identified success factors

During the needs assessment exercise, a range of factors that are capable of affecting the level of acceptance, involvement, and success of any chosen improvement programme would have been identified. It is important that measures to eradicate or minimise negative factors among these, and ensure that positive ones are entrenched into the day-to-day activities of organisations. Some of these factors (empowerment, clear objectives, trust, and mutuality of purpose) are discussed below. Although every effort was made to include most of these factors, it is recognised that this list is

not exhaustive. Thus, there are opportunities for organisations using this framework to add more to this list to suit their circumstances.

The extent to which stakeholders feel they have been integrated into the overall management of the initiative affects the acceptability of the framework and its activities. The level of integration is shown by the level of *empowerment* or power given to people to take decisions in matters relating to the choice and implementation of framework activities. Empowerment, which has already been described as the extent to which an individual or group has been trusted and given authority to make important decisions, has a great influence on the level of performance and is positively associated with organisational commitment and stakeholder involvement (Section 3.5). Subsequently, the view taken in this research is that the higher the level of perceived empowerment, the greater the desire to improve on existing practices by stakeholders. Thus, empowerment becomes an efficient managerial control tool, which significantly influences the behaviour and attitudinal dispositions of the recipients. However, this level of empowerment is dependent on other factors such as good leadership and control structure, as well as effective communication. These factors have all been described in the preceding paragraphs.

Empowerment applies equally to teams and groups as it does to individuals. Team empowerment is the increased task motivation arising from team members' collective and positive assessments of their organisational tasks. This type of empowerment includes the collective belief by team members that they are influential and manifests itself in the extent of fundamental care shown by team members to their tasks. This form of empowerment is also shown in the degree to which team members believe

they have the freedom to make decisions and on the extent to which team members feel that their tasks contribute to the overall activity of the organisation. It is recognised that these dimensions may not be collectively present. Nonetheless, it is still possible for a team to experience a level of empowerment as these dimensions can combine additively to create an overall construct. The effect is that even though, a team may have little autonomy, its members can still experience a team empowerment to the extent that they feel a collective sense of potency, a high level of meaningfulness in their works, and also a sense that the team's work has a level of impact on stakeholders (Section 3.5).

The relationship between the degree of empowerment in an environment and the level of commitment shown by those within that environment has already been established (Section 3.5). The role of commitment to the success of these organisational initiatives has also been highlighted in the section which discussed the need to ensure acceptance (or "buy-in") of the proposed improvement initiative by stakeholders. Thus, apart from re-iterating that commitment is a critical success factor in any improvement initiative, it would not be discussed further in this section. The inclusion of this element of the framework is necessary because empowerment ensures a greater participation by stakeholders in the decision-making process of all aspects of the implementation of the improvement initiative.

The term empowerment as used in this framework goes beyond just being a mere demonstration of egalitarian ideals; it signifies a way of harnessing the knowledge and capabilities inherent in team members. Hence, empowerment becomes a tool which ensures that stakeholders contribute adequately to the success of an initiative through

an unwavering support for it. For this to be realised, it must be ensured that responsibilities for carrying out duties are appropriately delegated to individuals or groups. This is because empowerment rekindles a continual desire to seek ways of improving on existing practices (Section 3.5). An active participation of stakeholders in the decision making process (for instance by giving individuals and groups the freedom to suggest areas for improvement and how to achieve these) should be encouraged.

There are also economic justifications for the inclusion of this element. First, the willingness by individuals and teams to take on more responsibilities for support tasks brings about a corresponding reduction in the indirect cost incurred by a company. Empowerment also increases the zeal by individuals to acquire further knowledge and competencies. A brainstorming exercise among team members in a favourable environment often provides solutions to problems (such as modification of work processes based on ergonomic considerations). It also improves the team members' collective understanding of a situation and highlights the shortcomings of previous actions.

Equally as important as empowerment is the *clarity of purpose*. It was noted earlier that learning in partnership arrangements is enhanced by the existence of clear objectives and action plan (Section 3.7). It was also noted in Section 3.4.2 that the inability to understand the reasons why initiatives are undertaken lead to failure of such initiatives. A link between ensuring clarity of purpose and empowerment could be established here. It could, for instance, be inferred that an inadequate involvement (low empowerment) of other people in the implementation of an initiative

(programme) contributes to the inability to understand the reason for these initiatives. This situation does not encourage shared norms and values, and by implication does not encourage the transfer, learning and acquisition of knowledge in organisations (Section 3.7).

The outcome of an improvement programme in organisations using this framework is further influenced by the *type of relationship* which exists among organisations. Good leadership, effective control measures, effective communication, as well as empowerment are directly affected by the style of management or type of relationship(s) that exist in an organisation. The style of management and by extension the type of relationship between managers and employees (internally), or between different organisations (externally) has a great influence on the success or otherwise of this framework. There are evidences/suggestions that the type of relationship between an organisation and its business associates has an impact on its performance.

The nature of inter-firm relationship affects the ability to coordinate activities between those organisations within the supply chain, as well as the extent of improvements in the performance (or capabilities) of organisations in the supply chain. References were made in Section 3.5 to earlier works where supply chain relationships were argued to be determinants to the ability of organisations to attain performance and superior competitive advantage that are not readily generated by open market transactions. It was further observed that the nature of the relationship between a firm and its business associates has an important business implication for all firms (Sections 3.5). This implies that it is almost difficult to maintain long term

business improvements in antagonistic business relationships where negotiations are often confrontational and based on a win-lose philosophy, and where organisations use their privileged positions to ensure a maximum organisational gain (Section 3.5).

This framework can only lead to sustained improvements in health and safety management (or standards) if the adversarial type of relationship that often exist between buyers and suppliers (Section 3.3) described as being short-lived and centred almost exclusively on price is discouraged, and an atmosphere which encourages a culture of collaboration or compliance encouraged. Adversarial type of relationship affects the level of commitment to, acceptance of leadership and control structures, information level and communication mechanisms, as well as empowerment. These have been described in preceding sections as critical to the success of any planned programme of improvement. Thus, the type of relationship between organisations determines the level of collaboration and trust. Subsequently, the existence of a mutual relationship, where the interests of all stakeholders are given equal consideration, creates an atmosphere for mutual risk sharing and respect for one another.

Another factor which is crucial to the success of this framework is the level of *collaboration* among organisations in a supply chain. Collaboration ensures that organisations benefit from the resources of other organisations, and are therefore better placed to make improvements in their own operations (Section 3.3). It is very unlikely that collaboration among organisations would be sustained when there is no *trust* among these organisations (Section 3.1). Further references to the importance of trust in the success of initiatives involving different organisations were made in

Section 3.3, where it was stated that partnerships are built upon trust. Furthermore, the implementation of initiatives is often affected in situations where stakeholders do not trust the motives of an initiative (Section 3.4.2). There are also suggestions that the willingness of an organisation to take part in, or seek advice from a particular source is highly dependent on the extent to which that source is trusted (Appendix M). There is an observed positive correlation between performance improvement and collaborative relationships based on trust; sustainable improvements in supplier associations have been shown to be more in relationships based on trust, because it encourages mutual risk sharing among organisations (Section 3.5).

Another factor, which has to be given a serious consideration, is the extent to which planned activities address or cater for the needs of all stakeholders. There is an observation that partnerships among organisations are built upon mutual commitment, and organisations could only benefit from these arrangements if there were jointly defined agenda that was focused on discrete, attainable and potentially measurable goals (Section 3.3). It is also recognised that organisational compatibility is an antecedent to partnering (Figure 3.3.1). While having a mutuality of interest or purpose remains an important aspect of supply chain collaboration, there is also a need to balance the needs and requirements of various stakeholders in a way that does not compromise the outcome (Section 3.5). Thus, an effective health and safety management strategy fulfils the business needs of various stakeholders by assessing, and comparing their peculiar health and safety needs and performances (Section 2.5.1).

Table 6.9.1: Citations justifying inclusion of utilising identified success factor

Proposed framework element	Explanation and citations
Utilise identified success factors	<p>If those factors which are capable of affecting the level of acceptance and involvement in any chosen improvement programme are not identified, then it may amount to a waste of resources trying to implement any improvement initiative</p> <ol style="list-style-type: none"> Empowerment: <ul style="list-style-type: none"> The desire to improve on existing practices is influenced by the level of empowerment (Kirkman and Rosen, 1997), which has been positively associated with organisational commitment (Liden <i>et al.</i>, 2000). Empowerment leads to greater involvement of stakeholders and increases the desire to constantly seek ways to improve existing practices (Crant, 2000; Edmondson, 1999; Spreitzer, 1995) (Section 3.5) Clear objectives and action plan <ul style="list-style-type: none"> Clarity of objectives and goals enhances learning in partnership arrangements (Doz, 1996). Again, it has been observed that conditions which encourage shared norms and values enhance learning and knowledge acquisition in organisations (Wagner, 2003) (Section 3.7) The inability to understand the motives behind initiatives often lead to the failure of such initiatives (Hines and Rich, 1998) (Section 3.4.2) Relationship style: <ul style="list-style-type: none"> Collaboration: <ul style="list-style-type: none"> Lee <i>et al.</i> (2000) and Ellram and Cooper (1990) believe that collaboration among organisation can help these organisations to compete adequately in the face of the increased competition among organisations (Aquilon, 1997) (Section 3.3) Collaboration has been considered as being able to create an atmosphere that enhance mutual risk sharing (McIvor and McHugh, 2000) (Section 3.5) Trust: <ul style="list-style-type: none"> Collaboration between organisations is sustained by trust (Beach <i>et al.</i>, 2005) (Section 3.1.2) Similarly, partnerships have been observed to be built upon trust (Mohr and Spekman, 1994; Dwyer and Tanner, 1999) (Section 3.3), and lack of trust about the motives of initiatives often affects its implementation (Hines and Rich, 1998) (Section 3.4.2) There is an observed positive correlation between performance improvement and collaborative relationships based upon trust (Klassen and Vachon, 2005). While a climate of trust provides a basis for collaboration (Handfield and Nichols, 1999), lack of trust leads to confrontational relationships among organisations (Saunders, 1997). It has also been shown that sustainable improvements in supplier associations is more in relationships based on trust (Liker and Wu, 2000), because it encourages mutual risk sharing (McIvor and McHugh, 2000) (Section 3.5) The willingness of an organisation to take part in, or seek for help and advice from certain sources is affected by the extent to which that source is trusted (Ring and Van de Ven, 1994). Distrustful relationships is not favourable to collaborative relationships (Johnston and Lawrence, 1988) (Appendix L) Mutuality of purpose: <ul style="list-style-type: none"> Partnerships among organisations are built upon mutual commitment (Dwyer and Tanner, 1999), and organisations can only benefit from these arrangements if there is a jointly defined agenda focused on discrete, attainable and potentially measurable goals (Gunningham and Sinclair, 2002). Also organisational compatibility is an antecedent to partnering (as shown in Figure 3.3.1-Mentzer, <i>et al.</i>, 2000) (Section 3.3) There are also observations that mutuality of interest or purpose remains an important aspect of supply chain collaboration (Ellram and Cooper, 1996; Ellram and Edis, 1996; Ireland and Bruce, 2000), BSR Education Fund, 2001) (Section 3.5) According to Madu (1996), health and safety management strategy can effective only if it fulfils the needs of stakeholders. This, it can be achieve by ensuring that the individual health and safety needs of the stakeholders are compared and addressed (Madu, 1996) without compromising the outcome of initiatives (Nickols, 2000) (Section 2.5.1)

6.10 Implementation of framework

A critical aspect of supply chain relationship is the creation of a forum for discussion and brainstorming. This could be achieved by *scheduling meetings*, during which stakeholders are informed about planned actions, and given opportunities to comment on matters of importance to them. A strategy for the implementation of a safety

management system can only be effective if it encourages the dissemination of health and safety policy (Section 2.5.1). Advising stakeholders of current situations through effective information sharing channels (such as regular meetings) helps them to improve their performances by making accessible to them, information and resources that would put them ahead of the game (Section 3.3). It has already been noted that some organisations failed to achieve their objectives for embarking on some improvement initiatives because they were unable to create a forum to adequately explain and justify the reasons for these initiatives and ensure that they were well understood by all parties involved (Section 3.4.2). This would have been best achieved during a meeting of stakeholders.

There are also observations that organisations have formed the habit of bringing their most important suppliers and subcontractors together on regular basis, where through a process of brainstorming, they are able to find solutions to individual or common problems brought to their notice (Section 3.4). Thus, a regular gathering (meeting) of business associates or supply chain members not only acts as an integrating factor (Sections 3.4 and 3.5), but also becomes an effective tool for addressing performance issues (Section 3.5). A reason for this is that these meetings provide very good opportunities to discuss expectations and also share information on a range of operations or management issues. There are suggestions that regardless of the level of co-ordination, which exist in a supply chain, there is every need that organisations collaborate with each other, even if on an informal basis, through regular meetings to discuss issues affecting them, offer support to one another, train and share best practices with each other on new processes, practices, and resources (Section 3.5).

Table 6.10.1: Citations justifying inclusion of implementation of framework

Proposed framework element	Explanation and citations
Implementation of framework	<p>A critical aspect of collaborations in supply chain relationships is the ability to create a forum for discussion. This can be achieved by organising supplier meetings. This is increasingly been used by organisations as tools for establishing closer relationships and to address performance issues</p> <ul style="list-style-type: none"> • Advise stakeholders about planned actions: <ul style="list-style-type: none"> ○ An effective strategy for implementing a safety management system ensures the development of an health and safety policy and the establishment of mechanisms for an proper dissemination of this policy (Quinlan and Bohle, 1991)(Section 2.5.1) ○ Advising stakeholders of current situation through an effective channel of information sharing helps organisations to keep ahead of the game (Department of Trade and Industry, 1998), thus helping them to improve their performances (Aquilon, 1997)(Section 3.3) ○ Supply chain initiatives often fail not only because of the inability to adequately explain the motives and concepts behind these initiatives, but also because any difficulty by stakeholders to fully understand these (Hines and Rich, 1998) (Section 3.4.2) • Schedule regular meetings: <ul style="list-style-type: none"> ○ Regular meeting of business associates act as an integration mechanism (Hines and Rich, 1998) (Section 3.4) ○ Furthermore, it has been observed that the most effective supplier meetings are collaborative ones that provide opportunities for the buyer and supplier to engage in joint problem solving to meet their business goals. And when these meetings are held regularly, they (supplier meetings) become an effective tool for addressing performance issues with suppliers, communicating expectations, as well as sharing information (Lippmann, 2002) (Section 3.5)

6.11 Evaluation and monitoring of initiative

The areas in which an organisation wishes to improve would have been identified during the needs assessment exercise. The identification of these areas of improvement is not in itself sufficient for the achievement of desired improvements; there is also a need to establish a structure which ensures an assessment of progress made in the implementation of the activities specified in the plan of action drawn up. A monitoring and evaluation exercise helps an organisation (or assessor) to monitor progress with the implementation of the initiative and identify any setbacks. It thus offers an opportunity to advice those involved on the modifications (if any) to existing implementation plans so that the initiative would progress as planned and bring about improvements as desired. This aim can only be achieved through a rigorous and robust collection of data (both quantitative and qualitative) that can be used to

ascertain if deliverables have been met and set milestones reached. While a monitoring exercise ensures that key information that could be used to determine if an intervention is going according to plan are collected on regular basis, it does not provide information about the change(s) or modification(s) that could help to improve the outcome. An evaluation process on the other hand involves a retrospective assessment of the impact of the intervention, and explains the factors that have influenced the outcome of the intervention.

Also, during the evaluation and review process, the interactions among the stakeholders as well as team members during the period of implementation of the initiative are examined. The activities in this step ensure that the framework achieves the aims and objectives for which it has been designed for, and as envisaged by the stakeholders. Its effectiveness is dependent on the ability to:

- advise stakeholders of planned and executed actions
- measure performance against set objectives
- review actions with a view to improving performance
- hold regular meetings/briefings

These actions (e.g. advising all stakeholders of executed and planned actions) form integral parts of the framework, and are re-enforced by the other activities (e.g. communication, teamwork) already discussed in the preceding sections. Another tool, supplier meetings, is increasingly being used by organisations as opportunities or avenues for addressing performance issues. The researcher observed, through discussions and the literature survey carried out, that many organisations now view

collaborative supplier meetings as effective tools for addressing issues with their business associates. These meetings not only serve as avenues for sharing an organisation's expectations with its business associates, but also provide opportunities for these organisations to engage in joint initiatives aimed at solving their problems and achieving collective and independent business goals.

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organisation's expectations with its business associates, but also provide opportunities for these organisations to engage in joint initiatives aimed at solving their problems and achieving collective and independent business goals.

Although it is true that this framework is intended to improve the standard of health and safety management in supply chains and constituent organisations, this objective will become an illusive one if there are no mechanisms in place to measure and monitor performance against milestones and deliverables (or key performance indicators – KPIs). These key performance indicators must have been agreed and set by stakeholders during the initial brainstorming sessions and as part of an agreed implementation plan (Section 6.3, and Figure 3.3.1). Examples of KPIs include the development of an acceptable health and safety management policy, number of employees that have gained new skills and qualifications (e.g. CSCS card in the construction industry), better signage within business premises, and reduction in the number of lost time accidents among others.

The purpose of the evaluation and review process is to assess how well the various elements (resources, activities, etc) of the framework linked together, with a view to ensuring a better understanding of how the initiative was implemented. This phase of the framework is important because it ensures that an assessment of the way in which available resources were used, during the implementation of the framework, is carried out. It also makes a judgement of the extent to which key performance indicators have been met. Again, health and safety review and audit are used principally to judge not only the level of implementation, but also the effectiveness of the

arrangements that have been put in place to control risk and improve safety performance (Section 2.5.1).

Undoubtedly, review and audit of performance can only become indispensable aspects of improving and maintaining health and safety performance if stakeholders were adequately given the power and opportunity to ensure that standards achieved in practice were in line with established objectives. Within this phase, activities such as rotation of leadership role/teams, review and audit of results, relationships, directions etc, ideally carried out by senior managers with input from other levels of management can be undertaken.

Table 6.11.1: Citations justifying inclusion of evaluation and monitoring

Proposed framework element	Explanation and citations
Evaluation and monitoring	<p>The phase ensures that activities aimed at improving all or certain aspects of health and safety are producing the desired results</p> <ul style="list-style-type: none"> • The ability to review success or otherwise of an implementation programme pre-requisite for failure to identify shortcomings, or even in the maintenance of desirable standards (Hines and Rich, 1998). It is also recognised that problems in supplier associations can be solved through the establishment of measurable goals and regular check ups and assessment to ensure that these goals are met (Izushi and Morgan, 1998) (Section 3.4.2) • An evaluation and measurement of performance process is used to measure observable and real commitment (KPMG, 2001). Subsequently, an effective health and safety implementation strategy must include clearly defined procedures for the collation and evaluation of data (Quinlan and Bohle, 1991). These data are then used during periodic audits where in-depth appraisal of all elements of the occupational health and safety management system are carried out to ensure that standards not only achieved, but are also in line with set objectives (British Standards Institution, 2004). (Section 2.5.1)

The discussions in the above sections have been combined to yield an initial framework (Figure 6.11.1 below) to evaluate critically health and safety strategies in supply chains in the UK.

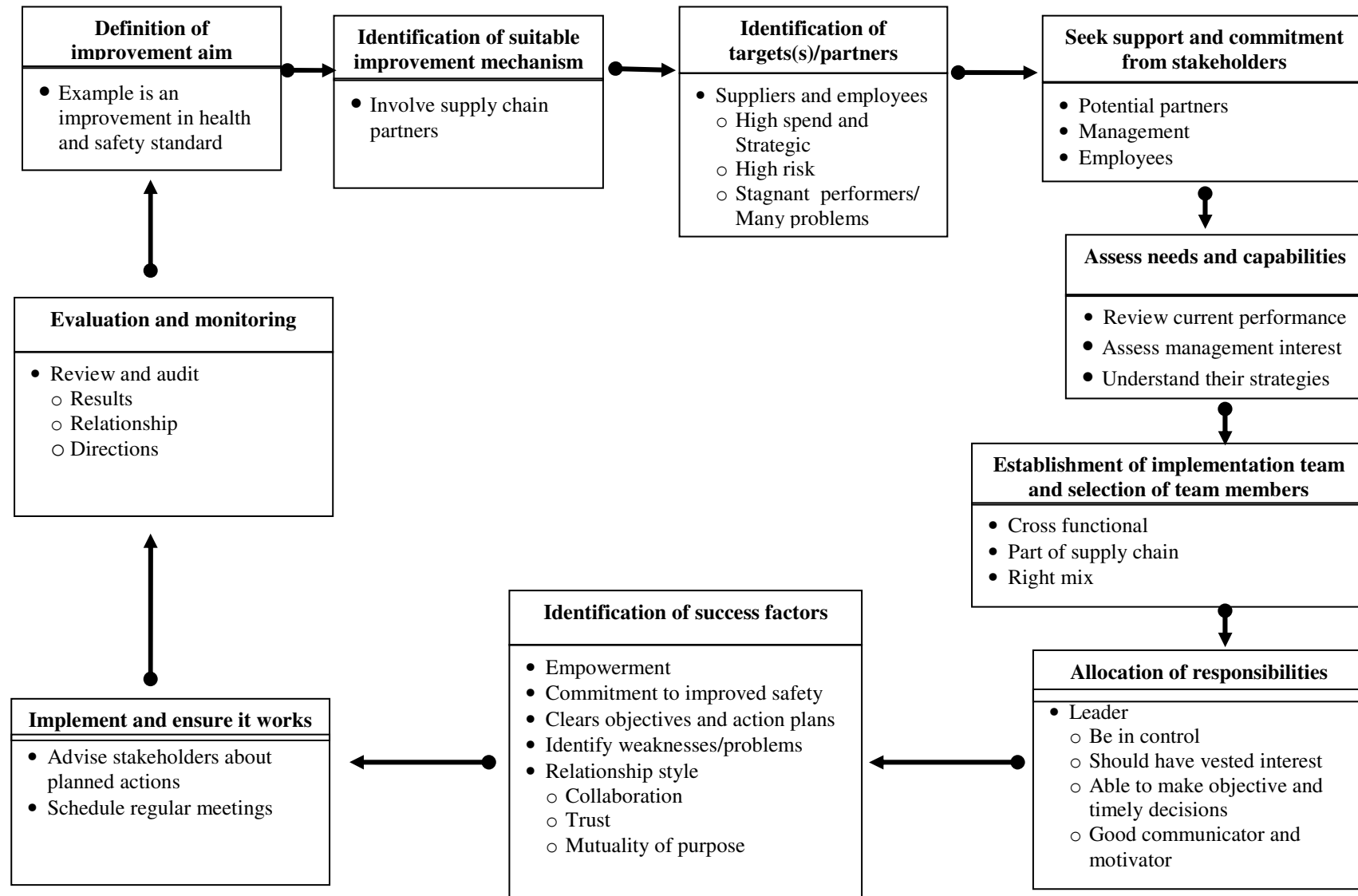


Figure 6.11.1: Conceptual health and safety evaluation framework

6.12 Enhancement and development of final framework

The major aim for embarking on this project is to develop a simple and easy to implement, yet effective framework that would help organisations, especially in the UK, to evaluate critically health and safety strategies in their supply chains. It is thus necessary that the framework shown in Figure 6.11.1 above be refined to enhance its clarity and effectiveness.

This framework is emergent in nature and its implementation is expected to lead to a redefinition of embedded views, experiences, and interpretations of supply chain health and safety management strategies. It is envisaged that this would:

- lead to an increased awareness of health and safety issues
- help organisations to assess their approaches to health and safety management, and the level of importance attached to the health and safety performance of their customers and clients
- help to establish the impact of poor health and safety standard on the performance of organisations within a supply chain and establish improvement measures to minimise the effect of these
- ensure that a mechanism to monitor, evaluate and review the effectiveness of adopted strategies to improve health and safety in all or specific parts of a supply chain is established and that the outcome of this is communicated to all stakeholders so that further ways to improve standards can be identified.

6.12.1 Assess health and safety needs and formulate strategy

The elements discussed in Sections 6.2, 6.3 and 6.6 have been combined together under a new title - *Assess health and safety needs and choose strategy* (Figure 6.12.1 below).

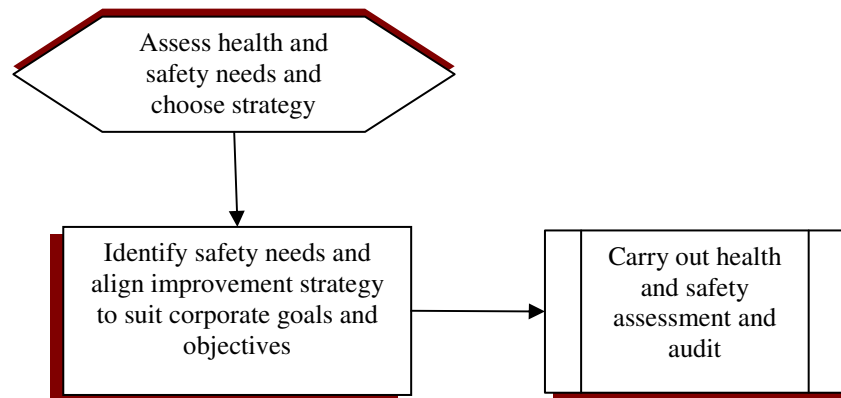


Figure 6.12.1: Assessment of needs and choice of strategy

This modification is justified because the numerous benefits derivable from establishing a supply chain health and safety management strategy (Section 2.1.1) will elude so many organisations if the health and safety needs of an organisation are not properly established through an appropriate health and safety assessment and audit. The assessment of those health and safety risks faced by an organisation is a major requirement of the Management of Health and Safety at Work Regulations (MHSWR) 1992; and safety audit helps in the identification of source(s) of risks and those that are vulnerable to these risks (Section 2.6). Again, an effective needs and capabilities assessment exercise, helps to highlight gaps in performance, and ensures that the best mechanism(s) to adopt in order to attain the required performance level are established. This exercise also ensures that any improvement strategy adopted shall be in line with corporate strategies, goals and objectives.

6.12.2 Identify target(s) and critical success factors

Sections 6.4, 6.5 and 6.9 have been combined and given a new title *identify target(s) and critical success factors* (Figure 6.12.2 below). A new element, effective leadership, has also been added as a success factor.

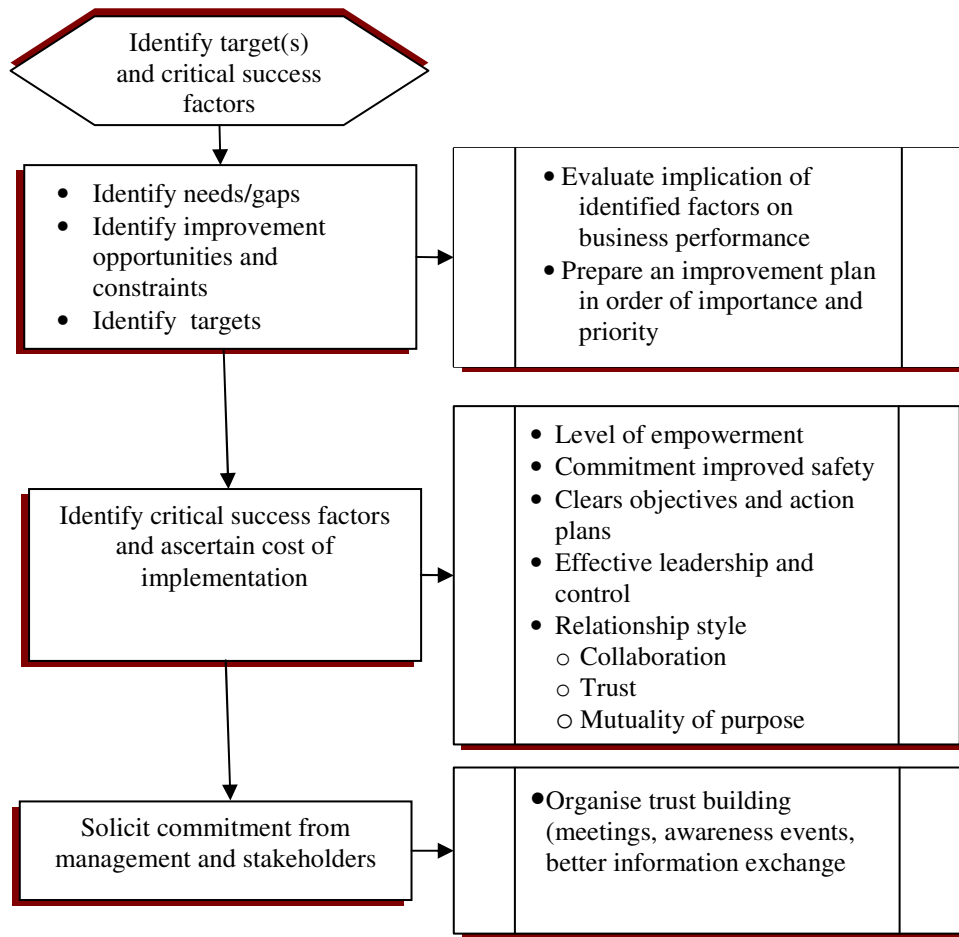


Figure 6.12.2: Identification of improvement target(s) and success factors

6.12.3 Establish implementation structure

The establishment of an implementation structure is a combination of Sections 6.7 and 6.8, and is shown in Figure 6.12.3 below.

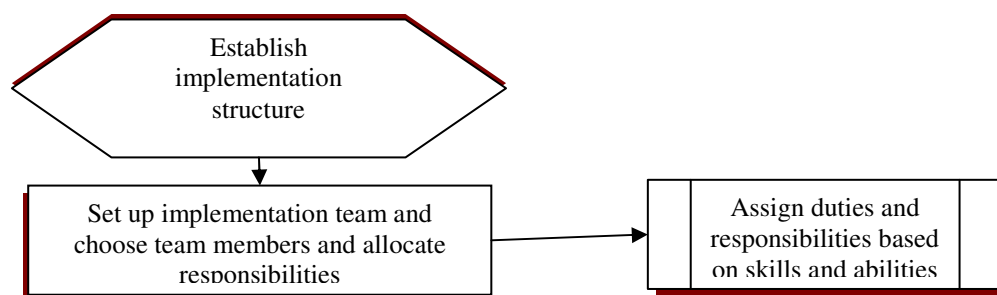


Figure 6.12.3: Elements of establishment of implementation structure element

6.12.4 Implement and evaluate impact of strategy

Sections 6.10 and 6.11 have been combined to yield Figure 6.12.4 below.

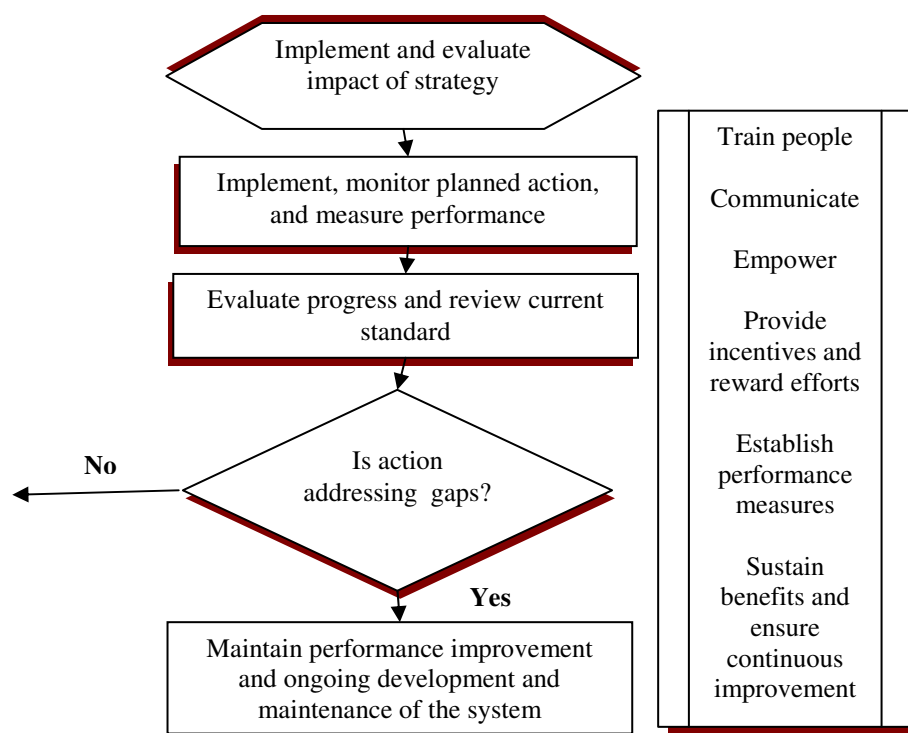


Figure 6.12.4: Activities within evaluation and review of the impact of initiative

A combination of those activities and enabling factors discussed in Sections 6.12.1 to 6.12.4 above leads to a final framework to evaluate critically health and safety strategies in supply chains (Figure 6.12.5 below). It has been designed to be participatory in nature (that is, involving all major stakeholders). It is thus recognised that there may be difficulties in persuading organisations to share knowledge in an environment where knowledge may mean power and money.

It proposes a system that would not only lead to an increased awareness of health and safety issues in organisations, but also helps organisations and relevant parties to:

- assess the level of importance attached to the health and safety performance of the business associates of an organisation, and how these impact them
- determine the impact of poor health and safety on the performance of organisations in a supply chain and take measures to define responsibilities to improve this
- establish a mechanism to monitor, review, and improve health and safety in all or specific parts of their supply chains, as well as how to communicate these to members of the supply chain

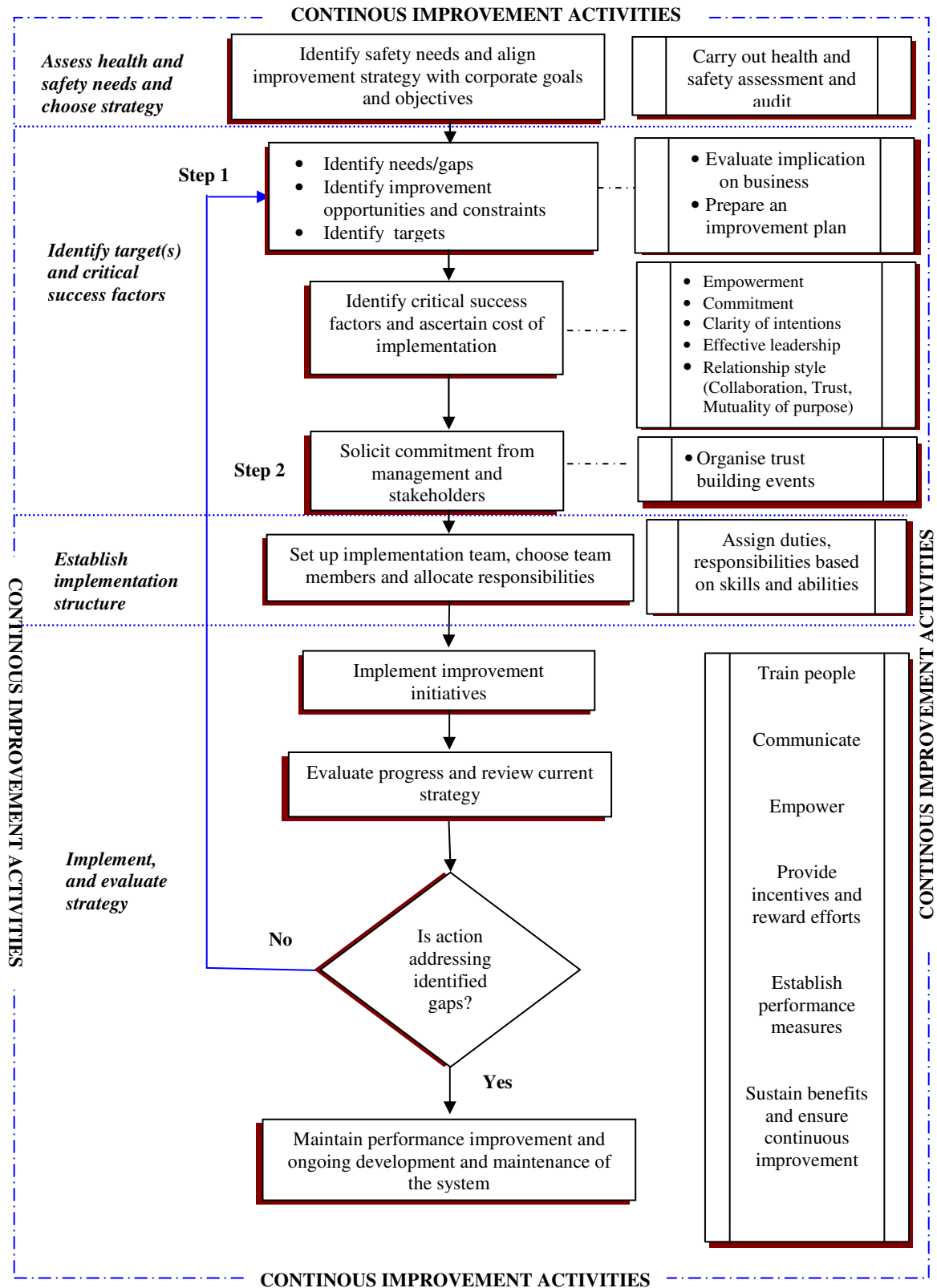


Figure 6.12.5: Health and safety evaluation framework

6.13 Implementation of framework in a case supply chain

In this section, the outcome of an awareness creation event organised by the researcher for members of the case study supply chain is presented. This event represented the first in a series of activities aimed facilitating the establishment and sustenance of an organised network of suppliers and sub-contractors of the case study organisation. This step was influenced by the results presented on Tables 5.5.1 and 5.5.2 which highlight the need for closer co-operation among organisations. The activities that were carried out during this implementation stage were determined by the desire of the collaborating company to ensure higher health and safety standards in its supply chain, through the establishment of closer and better relationships with its suppliers and sub-contractors.

The management of the case study organisation felt that their participation in the programme would help them to achieve this objective. A majority of the respondents (between 61.3% and 78.2%) to the survey carried out claimed to belong to industry specific partnerships and networks that encourage the sharing of shared good practice. Subsequently, it could be argued that desire of the case study organisation to establish a network of its suppliers and sub-contractors is a misplaced one. This view is informed by the notion that many organisations already belonged to networks that encourage good management practices and better relationships, that has been created by the survey result. However, the very low positive responses to the survey items shown on Table 5.5 show that those activities that would have made their membership of these networks and groups effective and beneficial were lacking.

Two techniques - the semi structured interview and participant observation - were used by the researcher during the implementation of the framework in the case study company.

6.13.1 Semi structured interview with the case study organisation

The semi-structured interview was used to explore further, and or clarify issues with participants. For instance, the semi-structured interview with Ken Rawe - the Purchasing and Supply Chain Manager (PSCM) of the case study company, was used to ascertain more about the case study company's attitude to supply chain partnership and integration. The researcher strongly believes that these two factors (partnership and integration) are determinants to the success of any intervention programme. The interview was also used to identify those elements that would help in ascertaining/establishing the effectiveness of the framework. The details of the interview are reproduced below for convenience purposes.

Researcher: Thank you for agreeing to participate in this exercise. Our discussion today is mainly to establish what your expectations are and what you would wish to achieve through this exercise.

PSCM: Our aims for this exercise are to:

- develop our supply chain
- understand more about our supply chain and increase their understanding of us as a client
- gain assistance from Coventry University in achieving the above
- develop our links with the University

As discussed, these are all fairly nebulous, and we need to understand ways of measuring our progress. One of the ways we can do this is by agreeing KPI's (key performance indicators). The other immediate method of measuring the success of the project is by the use of questionnaires to be

issued by Coventry University direct to the supply chain, and returned at the event. Other targets will evolve from the event.

Researcher: Over what period of time do you envisage that these aims would be achieved?

PSCM: This is an ongoing project; however we would set a target for KPI's of 6 months, with initial implementation within 2 months.

During the longer term, we would envisage the introduction of one to one feedback, and note Ike's suggestion of formation of a "supplier club", funded in part by the supply chain.

Researcher: How many suppliers do you have? It is important to know this if you are considering the establishment of a supplier club

PSCM: We currently have approximately 800 companies on our system; however, many of these have been used on a one off basis due to client specification and may never be used again. Due to the combined nature of our supplier list and accounts system, these suppliers remain on the system indefinitely.

Researcher: How many of these are core suppliers?

PSCM: We would estimate that we have 90 core suppliers specialising in the different aspects of our business operations

Researcher: How would you rate your relationship with your suppliers in the past?

PSCM: We believe that we have good relationships with our core suppliers, and have worked with many of them over a number of years. We try to be flexible with them, and expect a similar attitude in return.

Researcher: How do you intend to treat your suppliers/sub-contractors in the future and why?

PSCM: We intend to treat members of our supply chain honestly and respectfully. We intend however to improve feedback loops on performance in both directions, but are working against the industry backdrop of distrust and suspicion.

Researcher: Do you have any supplier development programmes or initiatives in place?

PSCM: We have a Construction Lean Improvement Programme in progress at our Blakenall project which involves our supply chain in bringing lean techniques from manufacturing into construction.

Our supply chain has also been invited to join us on our shared training events to obtain CSCS cards, with some success.

- Researcher:** Do you feel that your suppliers have been co-operative?
- PSCM:** Generally, yes! However there are companies with whom the likelihood of building partnerships based on mutual trust is minimal.
- Researcher:** How would you ascertain the cost and benefits to your company of the programme planned?
- PSCM:** The cost to the company is really more time and opportunity cost than direct cost.

We believe that on the long term, we will have to address our IT resource to improve our management processes, and this is one of our medium term objectives outside of this project. The benefits we hope to accrue have been given in my answer to your first question above

The above excerpt contains a statement of intent encapsulating the needs of the company as well as the best way to satisfy these needs. A closer analysis of the contents of the interview highlights the aims of the company for undertaking the exercise. These become the indicators or benchmark upon which the effectiveness of the framework in meeting the needs of the company would be determined.

To achieve these, it was agreed between the representatives of the company (health and safety and the purchasing and supply chain managers) and the researcher that there was a need to increase the level of trust among between the company and its suppliers and sub-contractors. One way of achieving this, is through the organisation of a series of events where these organisations would meet on informal basis and be given an opportunity to interact and deliberate on issues of concern to them. The event would be used by the case study company to convey or explain to the

participants, its intentions about managing health and safety at their work sites and how these would be achieved. This first event, it was agreed, would be held at Coventry University as a way of reassuring these companies that the outcome was intended to help them improve and not as a way of identifying and punishing poor performance. There would also be lectures to be delivered by Coventry University lecturers and other speakers on the role of supply chain management in the sustenance of profits in organisations. This event was held on January 26, 2005.

6.13.2 The use of participant observation in this research

Another possibility, it was agreed, was for the researcher to spend a period of time in the company and assess its health and safety management in general and see how to improve on them.

In 2005 the researcher helped the case study company to organise an awareness day for its suppliers and sub-contractors. This represented a major step taken by the organisation to affirm to its supplier and sub-contractors its intention not only to make health and safety a major aspect of its contract terms, but also its willingness to help its supply chain members attain better health and safety standards.

It was envisaged that an event such as an “awareness day” held initially at a neutral venue with outside facilitators would ensure the acceptance of this initiative by these other organisations. The researcher offered to host the event at Coventry University. There were lecture and presentations by supply a chain management expert from Coventry University, the procurement manager, as well as the health and safety

manager of the case study organisation. Excerpts from these are shown in Appendix F, while feedback to post-activity survey is shown in Appendix G.

Furthermore, between September and October 2005, the researcher undertook a placement in the case study organisation, which enabled him to observe how the organisation managed not only its own internal health and safety, as well as its efforts to help its suppliers and sub-contractors improve their health and safety standards of its suppliers and sub-contractors. During this period of placement, the researcher was attached to the health and safety manager, whom he helped to carry out site audits, arrange health and safety training courses for the employees of the company and its suppliers and sub-contractors.

The researcher was also asked to coordinate the planning of the supply chain health and safety workshop hosted by the case study organisation in association with two other major building contractors in West Midlands. This workshop was for the sub-contractors and suppliers of these respective companies and formed part of the 2005 Safety and Health Awareness Day (SHAD) coordinated by the Health and Safety Executive (UK). A post-event survey to gauge the level of satisfaction with the event by the participants was administered by the researcher at the end of the day (see Appendix H for a sample of this survey). The views of delegates about the day's event are shown in Appendix I).

The researcher was also actively involved in the efforts by the case study organisation bring together major contractors working for Her Majesty's Prison Services into a

strategic alliance, which aimed to put in place a streamlined health and safety management procedure in all their project sites. Conversations with representatives of these organisations provided further data and information that formed the basis of the framework that has been developed.

6.13.3 Implementation of framework: awareness and trust building day

This section discusses the activities of an awareness creating event organised by the researcher for selected members of a supply chain. The event was organised as part of a strategy to achieve the improvement objectives of the collaborating company. The interview with Mr Ken Rawe revealed that the company wants to use the framework, internally in the first instance, to assess its relationship with members of its supply chain. The long term ambition of the company is to positively influence the level of importance attached to health and safety by members of its supply chain.

There were 11 delegates from 9 companies that attended the workshop held at Coventry University. A distribution of the delegates according to number of employees showed that 6 (66.7%) were from small enterprises (1 - 49 employees), 2 (22.2%) were from the medium size range (50 - 249 employees), while 1 (11.1%) had more than 250 employees on its payroll. As shown on Table 6.13.1 below, a greater percentage (66.6%) of the participants were from the Construction sector (n = 6), while 22.2% (2) of the participants belonged to the service sector. However, one of the participants (11.1%) specified two different industrial sectors, thus the researcher was unable to ascertain which sector the participant's company belonged to.

Table 6.13.1: Distribution of attendance by industry sector

Sector	Frequency	Percent
Construction	6	66.7
Service	2	22.2
Total	8	88.9
Unclear	1	11.1
	9	100.0

It seems that the case study company has a culture of maintaining long working relationships with a number of its suppliers and sub-contractors (implied by figures on Table 6.13.2 below). Cumulatively, these companies have been business associates with the case study company for 69 years. This ranged from a minimum of 4 years to a maximum of 35 years. The table further shows that one-third of the companies that were represented have maintained a business relationship with the case study company for ten years or more.

Table 6.13.2: Number of years in business with Case Study Company

Years in Business	Frequency	Percent
4	2	22.2
5	4	44.4
10	1	11.1
15	1	11.1
35	1	11.1
Total	69	100.0

When polled on certain aspects of health and safety, eight (8) out of nine (9) respondents felt that poor health and safety standard affected not only their image, and operations. However, one participant felt that poor health and safety standard does not have any impact on his organisation's business operations and image. In terms of

time dedicated to health and safety management activities within their businesses, five (5) participants said that their companies dedicated between three (3) and eight (8) hours a week to health and safety management, two (2) felt that their companies dedicated ten (10) hours a week. One (1) other participant said that his company dedicated forty (40) hours, while another one (1) participant said that his company dedicated seventy (70) hours in a week to health and safety management activities.

All the participants stated that they have health and safety policies in place. Participants from more than fifty percent (50%) of the organisations felt that they had the necessary health and safety management tools. However, the employers of only three (3) participants carry out health surveillance as part of the health and safety management process.

In answering the question about their sources of information on health and safety matters, six (6) companies said they got their information from the Health and Safety Executive, five (5) companies said that they accessed their information through industrial network/safety groups, as well as health and safety journals respectively.

On the major motivators for maintaining a good health and safety standard, all nine (9) organisations represented said that health and safety legislation, requirement of customers, encouragement from customers, reduction in risk posed by company, protection of company's image are great motivators. Also, factors in the views of the respondents that greatly influence the management of health and safety within their businesses include manager's commitment which was cited by eight (8) respondents,

improving the competitiveness of the business cited by seven (7) respondents, pressure from employees cited by six (6) respondents, as well as a reduction in insurance premiums which was cited by seven (7) respondents.

Five (5) (i.e. 55.6%) respondents said that they were informally assessed on their health and safety standards by their customers, while 2 (22.2%) said they were not informally assessed by their contracting customers. There were two non responses to this question.

The following questions yielded similar responses, with seven (7) or 77.8% of the respondents answered yes, while there were two (2) non responses to these questions:

- We are assessed informally on our health and safety standard by our customers
- We are assessed formally on our health and safety standard by our customers
- Our customers set health and safety criteria that we must meet
- Health and safety performance forms part of our contract conditions

Although, more than fifty-five percent (55.6%) of the respondents said that their customers rated health and safety performance highly as cost, about twenty-two (22.2%) felt that was not their experience. There were 2 non responses to this question. On various aspects of supply chain activities, five of the companies said that they were part of a network which shared information on health and safety good practices, while four (4) said that they were not members. A similar response pattern emerged when questioned on whether they were part of a supply chain initiative aimed at improving the performance of its members.

All nine respondents said they were willing to participate in a supply chain improvement initiative in order to improve the health and safety performance of their companies. When questioned on whether they have received guidance from their customers, eight (8) companies answered yes, while one (1) company answered no. However, seven (7) of the participating companies said they had benefited from improvement workshops and visits by their customers aimed at educating them on how to improve their health and safety standards, while two (2) said that they had not benefited from such gesture from their customers.

On the issue of participating in supply chain improvement initiative, all nine participating organizations said that they would support a scheme initiated by their customers aimed at improving its supply chain. Again, a similar response pattern was given by the participants when the researcher wanted to ascertain if:

- they would like support in improving their health and safety record
- their customers communicated to them their health and safety criteria that must be met if they were still to remain in their preferred supplier list
- they benefited from improvement workshops/seminars that were organized by their customers
- their customers help them to improve their health and safety performance
- they would you be interested in participating in a supply chain initiative as a means of achieving improvements in their health and safety performance
- they were interested in participating in a supply chain initiative aimed at improving their operations

Seven (7) of the respondents said that they offered education to their suppliers through written materials.

An assessment of the impact of the event on the participants, which was carried out by the Procurement and Supply Chain Manager of the case study organisation reveals that there were noticeable gains/achievements as a result of implementing the framework or parts of it. This report is shown in Appendix J. The rating of the event by participants is shown on Table 6.13.3 below.

Table 6.13.3: Level of satisfaction with supply chain event

	Very satisfied	Satisfied	Neutral	Dissatisfied
	Count	Count	Count	Count
How satisfied are you with the quality of the overall event?	5	7		
How satisfied are you with the scope of the information presented?	4	6	2	
How satisfied are you with the usefulness of the information presented?	1	10	1	
How satisfied are you with the quality of the presentations in the general sessions?	5	7		
How satisfied are you with the overall meeting format's emphasis on collaboration?	2	7	3	
How satisfied are you with the time given to network and share ideas with other companies?	2	6	4	
How satisfied are you with the amount of time dedicated to benefits of supply chain collaboration?	5	2	4	1
How satisfied are you with the meeting's overall value in helping improve your professional effectiveness?	2	9	1	
How satisfied are you with that the meeting was a motivational experience for you?	2	7	3	
How satisfied are you with that your company received appropriate recognition for your contribution to the growth of the supply chain?	4	7	1	

6.13.4 Implementation of framework: Safety Health and Awareness Day (SHAD)

This event was held on October, 2005. Some of the activities that made up this event were organized Shaylor Construction Limited in conjunction with three (3) other major construction companies in West Midlands, UK, as part of their strategies to increase the overall awareness and standard of health and safety in their respective supply chains. The event included a supply chain health and safety workshop held at the Ramada Hotel, Solihull, and a health and safety workshop and demonstrations, coordinated by the Health and Safety Executive, UK, held at the Old Silhillians Memorial Ground, Knowle, Solihull. The assessment of the day's activities by participants is shown on Appendix I.

6.14 Assessment of ability of the framework to address needs of a stakeholder

An evaluation of the effectiveness of this framework has been guided by the extent to which it has satisfied the needs of the company as highlighted in the statement of intent which emerged during the interview with the Purchasing and Supply Chain Manager. This assessment would lead to a judgement and decisions being made about the activities implemented, and a logical conclusion arrived with regards to the worth and merit of the process or activity (based on Section 3.9). This exercise is thus a retrospective appraisal of the activities implemented, with a view to identifying improvement opportunities and providing empirically-driven feedback capable of influencing decision making and policy formulation.

It is recognised that an evaluation of the effectiveness of this framework, in the manner suggested here, may be questioned in certain quarters. However, the

measurement of effectiveness or efficiency of an activity is based mainly upon the ability of the activity to meet the needs of the stakeholder and not necessarily upon a pre-determined view or notion of what should have been achieved. Although it is further recognised that the use of quantitative data in assessing the effectiveness of a programme may be preferred in certain quarters, the observation in Section 3.9, that an evaluation can also rely on qualitative data to measure and express progress made in the implementation of agreed plans, justifies the assessment carried out here using mostly qualitative data.

A common trend in all these assessments is the issue of the length of time between the implementation of the activities and the time that assessment or evaluation was carried out. Much as this may have an implication on the eventual outcome, it has already been recognised in Section 3.9 that final outcomes of any improvement initiative may take several years to become visible or realised. This is especially true in this instance. Although the exercise is aimed at improving performance in an identified area of an organisation, it however still remains an academic exercise that has been carried out within peculiar academic constraints of time and resource constraints. Subsequently the evaluation of the effectiveness of this framework has been based on the feedback received at the end of the events organised, as well as the appraisals by the Health, Safety, Environment and Quality Manager and the Purchasing and Supply Chain Manager of the case study organisation.

A study of the reports contained in Appendices G2, H, I, J and N shows that although while there are still much to be done, there have, however been significant improvements and progress made in terms of satisfying the needs of the company.

6.15 Summary of chapter

A framework to evaluate health and safety strategies in supply chains in the UK has been developed in this chapter. This was achieved through a careful analyses and study of the outcome of the survey shown in Chapter 5. This process helped the researcher to identify those factors which affect the way in which health and safety is managed in organisations. Aspects of supply chain management, such as partnerships and collaborations, which were identified in Chapter 3 as factors that influence positive improvement in the operations and performances of organisations were combined with the basic requirements of a health and safety management system to produce a framework or guideline that would help organisations to effectively assess their health and safety needs and establish adequate mechanisms to manage it.

It is worth recounting here that the following steps are necessary for this framework to produce the desired result:

- the formulation of health and safety management strategy, in line with existing business strategy
- the assessment of health and safety needs with an aim to identifying those factors that either inhibit or enhance performance, evaluating both the cost and impact of these on the business, prioritising these needs and drawing up an implementation action plan. Furthermore, it is absolutely important that the commitment of both the management and employees of organisations embarking on this exercise are obtained.
- a robust management structure with members drawn from all stakeholders is necessary. These members would be selected based on their skills, abilities, and willingness to participate in the exercise
- there is a need to monitor, and evaluate the impact of any improvement initiative on the performance of the organisations involved. There is also need to train,

communicate and provide adequate incentives so as to ensure that any improvement achieved is sustained over time.

Certain aspects of the framework were implemented in a case study supply chain. The potential of the framework to bring about improvement in safety awareness and standards is shown by the responses from delegates to the after event questionnaire as shown in Section 6.7 (See Appendix G - end of event survey, and Appendix F - for assessment of the day's events by participants).

Chapter 7 below will present a summary of the entire research. It will specifically show how the aim and objectives of the research were met. It will also state the constraints within which the research was carried out as well as make recommendations for further work.

Chapter 7

Conclusion

7.1 Summary of research

The small and medium enterprises (SMEs) sector has been recognised as the stronghold of many national economies, and efforts at improving the performance (especially health and safety) of organisations within have been very successful. Nonetheless, the issue of level of compliance to health and safety rules and regulation by SMEs remain a very big concern as many SMEs still exhibit dismal compliance to health and safety rules and regulations. This low level of compliance and safety standards notwithstanding, many organisations within sector do not have sufficient resources to devote to health and safety management such that those SMEs with poor health and safety record avoid any form of contact with regulatory authorities for fear of being punished.

In consideration of the contribution of SMEs to the economy, the lack of observed success with earlier initiatives to improve the health and safety performance of the organisations within this sector, as well as the distrust between them and regulators/constituted authorities, a strategy which utilises those/any avenue(s) that SMEs are comfortable associating with, or which can use its vantage position in the supply chain to effect desired improved have been advocated.

To this end, this research was designed to develop a framework to evaluate critically the effectiveness of health and safety strategies in supply chains in the UK. The research adopted a triangulated research approach in which questionnaire survey was

combined with observations of a case study organisation to underpin the basis for the framework. This approach ensured that the research aim was achieved through a review of literature on health and safety management in supply chains and small and medium-sized enterprises, an exploration of the effects of poor health and safety performance on organisations, as well as the analysis of those factors that inspire health and safety management in organisations. Other objectives were the analysis of health and safety improvement strategies, the use of survey questionnaire to establish a basis for the development of a framework. This was achieved through the establishment of the perception and attitude to supply chain health and safety management, the development of a conceptual framework based on theory, as well as on ideal and best practices.

7.1.1 Key findings and implications

The following are the key findings in relation to the objectives that were set for this project.

A. Carry out a literature review of literature on health and safety management in supply chains and small and medium-sized enterprises

1) The standard of health and safety management and practices is lower in the SME sector compare to its larger counterpart

There are evidence to suggest that SMEs exhibit dismal compliance to health and safety rules and regulations. Organisations in this sector not only exhibit higher levels of non-compliance, but also have a higher number of accidents and ill health than their larger counterparts. It has been suggested that this could be because small firms are either unaware of their legal obligations, do not realise the dangers of poor practice, do not think about the benefits of good health and safety practice, or do not

have sufficient resource to devote to health and safety. There are suggestions that many SMEs with poor health and safety record do not always seek advice on health and safety matters directly from the health and safety executive for fear of being punished.

2) There is a need to improve health and safety practices and management, and standards in supply chains and SMEs

This need, to instil better worksite health and safety practices, is predicated upon the perceived role of supply chains in the sustained competitiveness of organisations, as well as the influence of supply chain pressure on the operations and practices of organisations, especially SMEs. Suppliers and sub-contractors are important stakeholders in the economy and supply chains

A conclusion could be reached that the need and or desire to bring about an improved health and safety standard in supply chains is predicated upon the perceived importance of suppliers and sub-contractors in the economy. There is also a view that this need/desire is, to a large extent, influenced by the social and humanitarian consideration of the large population at risk, bearing in mind that the SME sector employs about 99% of the workforce in many countries including the UK. Again, it has been shown the SME sector has a substantially worse health and safety standard than their larger counterparts.

3) Different sectors and enterprise sizes have characteristics and these require peculiar improvement strategy

Differences in the organisational structures of small and large companies are such that a strategy that has been successful in larger enterprises, such as the use the regulators

and their information gateway, the use of consultants, etc, may not have the same effect on SMEs. Furthermore, the size and diversity of the SME sector are such that the traditional means of regulating health and safety in larger organisations cannot be applied with the same effectiveness to SMEs.

B. *Explain the effect of poor health and safety performance on organisations and analyse factors that inspire health and safety management in organisations*

1) *Poor health and safety standard affects the image and operations of an organisation*

One major factor that motivates good health and safety management is the avoidance of bad publicity (protection of corporate image) from breach of health and safety laws. Another major incentive for better health and safety management by companies is the desire to forestall the importation of risks and liabilities to their own workforce and customers, from the activities of their suppliers/contractors. Also, un-safe work practices have adverse operational, financial, as well as image repercussion on organisations. This view is strengthened by the research survey findings which showed that major of the respondents believed that poor health and safety standard affects the operations and image, and economic viability of their businesses.

Furthermore, there is an inference that good health and safety standard in an organisation leads to low staff turn-over (i.e., improved staff recruitment, retention, and job satisfaction). This indicates that a poor health and safety standard leads to less manpower, higher level of compensation, and a reluctance by more people to work for an organisation that is shown to be indifferent to the welfare (including health and safety) of its employees.

2) Poor health and safety standard adds to the running cost on organisation

A failure to provide safe and conducive environment leads to cost resulting from treatment of injuries and ill health, insurance compensations, damage to properties, loss of goodwill and business, lost time and replacement of staff and personnel.

From the above, it was observed that major motivators for good health and safety management in organisations include the protection of corporate image and reputation, a reduction in the running cost.

C. Analyse health and safety improvement strategies

1) There is a need for a framework which will guide improvement initiatives, especially in smaller organisations

SMEs are not content with the practice of being advised on health and safety improvement initiatives only. In effect, they what they need is a framework and a forum that would act as a way forward.

2) Strategies that are based upon persuasion are more likely to succeed than those based on compulsion

Although it was shown that improvement in health and safety performance of organisations could be achieved either through persuasion or compulsion. However, there are indications that best results could be obtained through a structured programme of persuasion involving, the education and coercion of organisations, an explanation of the reasons why certain demands are made, the need for health and safety regulations, discussions on continuous improvement ideas, as well as continuous dialogue, trust and negotiation through a continued relationship.

Furthermore, improvement frameworks should not be too prescriptive as this could further alienate SMEs, and subsequently lead to a failure to achieve the objectives of the improvement initiative.

D. *Establish a basis for the development of a framework to evaluate critically health and safety strategies in supply chains in the UK...*

1) **Certain factors are critical to the realisation of the aims and objectives...**

The level of commitment to health and safety improvement, the ability to agree and sustain continuous improvement, the assessment of performance based on established measures, standards and objectives, as well as the identification and rectification of weaknesses and problems are more or less dependent on these critical success factors.

There is a need to identify those factors which are considered crucial

The establishment of a basis for the development of a framework entails the identification of those factors which are considered critical to the overall success of the improvement initiative. Findings from literature and the survey carried out show that the extent to which stakeholders feel they have been integrated into the overall management of the initiative affects the acceptability of the framework and its activities.

It was also found established that a clear definition of the purpose of an initiative also affects the outcome of an initiative. This is because learning in partnership arrangements is enhanced by the existence of clear objectives and action plan. Similarly, the type of relationship which exists among organisations is capable of affecting the outcome of improvement initiatives.

There are evidences of a strong association between the type of relationship between an organisation and its business associates and its performance. For instance, it would be quite difficult to maintain long term improvements or progress in antagonistic relationships. This is because negotiations in this type of relationship are often confrontational and based on a win-lose philosophy, such that organisations use their privileged positions to ensure a maximum organisational gain.

Thus, sustained improvements in health and safety management (or standards) can only be achieved or sustained if adversarial type of relationship, which is centred almost exclusively on price, is discouraged, and an atmosphere which encourages a culture of collaboration or compliance encouraged. The level of collaboration among organisations also plays an important role in the success of an initiative such as this, as it ensures that organisations benefit from the resources of other organisations, and are therefore better placed to make improvements in their own operations. However, this level of collaboration would be impossible to attain if there is no trust among these organisations that are involved. The awareness creation events organised by the researcher for members of the case study supply chain, ensured that those inhibitions and distrust which may have existed were greatly lowered. Subsequently, there was commitment to the activities of the initiative by all stakeholders.

The extent to which planned activities address or cater for the needs of all stakeholders was also found to be a crucial element. This is because organisation can only be committed to initiatives if there were jointly defined agenda that was focused on discrete, attainable and potentially measurable goals. Nonetheless, while having a mutuality of interest or purpose remains an important aspect of supply chain

collaboration, there is also a need to balance the needs and requirements of various stakeholders in a way that does not compromise the outcome.

E. Establish the perception and attitude to supply chain health and safety management

1) The standard of health and safety in organisations, especially the smaller ones are seen to be generally poor

Subsequently there is a need to instil better health and safety management practices in organisations and supply chains

2) There is an avoidance of safety regulators by some organisations...

Organisations with poor health and safety record still avoid the safety regulators and government agencies out of fear of being punished. As a result, it would be difficult to offer any help to this organisations. The implication is that by adopting a punitive stand, the safety regulators and government agencies become the greatest constraints to helping poor performing organisations from improving. However, designing activities increases the level of trust among organisations and regulators effectively reduce the effect(s) that the avoidance of regulators and government agencies by SMEs and poor performing organisations would have had on individual organisations and supply chains. Secondly, using a channel with which they are already familiar with (such as supply chain networks), becomes an effective channel through which health and safety regulators and government agencies could reach/communicate with these hitherto hard to reach organisations.

3) Investment in health and safety is regarded as undesirable cost

Investment in health and safety is still being regarded as undesirable cost by some organisations, especially within the SME sector. Thus, there is a need for a further

demonstration of the commercial benefits of good health and safety management to businesses, especially SMEs, if any meaning progress would be made in the improvement of health and safety standards in organisations

4) Earlier improvement initiative have not been effective

There were strong indications that earlier initiatives that did not utilise supply chain influences were not very effective and were inappropriate to the needs of SMEs. As a result SMEs still faced greater challenges than larger organisations in tackling health and safety issues. Subsequently, there were strong opinions expressed on the need to try new approaches to performance improvement that would utilise the influence of relationships.

5) There is need for adequate stakeholder involvement

The discussions and observations made in during this research all point to the need that ensure that the views of stakeholders with are considered at all stages, with intent to addressing their specific needs. This is because the imposition of an initiative on stakeholders (not matter how well intentioned) without adequate consultation. This problem can be solved by organising regular meeting, where these stakeholders are given an opportunity to express their views on matters and issues concerning operations in the supply chain.

6) Supply chain pressure has a great influence on performance improvement...

There are various suggestions from literature that supply chain pressure has a great influence on performance improvement in organisations (Chapter 3). This suggestion was supported by the empirical evidence from this research (Chapter 5). Subsequently, serious effort was put into ensuring that the contracting organisation in

the case study supply chain used its vantage position in the supply chain to initiate or drive forward the improvement initiatives desired in the supply chain.

7) There is need for adequate stakeholder involvement

Health and safety management is increasingly being recognised as an integral part of good management. This has also increased the recognition by organisations that the health and safety standards of their business associates can also impact on their own viabilities. To this extent, many organisations are no longer satisfied with focusing on improvement activities within their own organisations alone. These organisations now extend their improvement initiatives to the entire supply chain as a way of sustaining their own competitive advantage.

7.1.2 Contribution to knowledge

It was already established in Chapter 1 that there were earlier initiatives that were aimed at improving the health and safety capabilities of organisations, especially the hard to reach ones such as small and medium-sized enterprises. This being the case, the question that could be asked now is, has this research done anything different from these other initiatives? In other words, has it contributed to existing knowledge in health and safety improvement strategy? The answer to these questions is yes! This study has made a significant contribution to existing knowledge! Although previous efforts/initiatives to improve health and safety in organisations were observed, these initiatives were also shown to have been ineffective. First, findings from the research survey carried indicated that although there was a desire by large organisations to help their less capable (mostly small business) improve their health and safety standards, these desires were yet to be translated into actions. Furthermore,

the perceived influence of health and safety legislations towards improving health and safety standards is less in smaller organisations compared to that of supply chain pressure.

Secondly, while several references were made in this thesis to earlier health and safety improvement initiatives such as the good neighbourhood scheme, it should be pointed out that some of these organisations may not have any business dealings with the organisation acting as their mentor. Subsequently, they are not under any obligation (direct or indirect) to participate. They are only bound by their common desires to improve their health and safety standard. In contrast to the above scheme, in the supply chain model that has been proposed, a large company uses its vantage position in the supply chain to drive forward improvement initiatives needed in the chain.

This is because participating organisations are suppliers or sub-contractors to this large organisations, and it is highly probable that a poor health and safety standard (especially when they had refused to participate) would attract heavy punishment such as losing a preferred supplier status or even losing existing contracts. Furthermore, this study draws attention to the fact that the performance in one link in a supply chain often has a cascaded impact on the other links. In view of this it is recommended that access to needed resources or assets should not be unnecessarily denied to organisations that need these. Thus, this research has contributed to existing knowledge by:

- highlighting that what is needed by so many organisations, especially those in the SME sector is not just advice but a framework offering them practical help and guideline on how to improve their health and safety standards.

The literature works cited in Chapters 1 to 3 all point to the fact that it is not sufficient to merely direct organisations to sources of information and advice on health and safety matters, as a strategy for bringing about improvements and reductions in the rate and fatality of accidents in our workplaces. This view is reinforced by the views expressed by respondents to the survey questionnaire (described in Chapter 5). The feedback got from the case study organisation about the impact of the framework developed in this research shows that in order to attain the desired level of safety and health in our organisations, there is the need to embark on other activities that would prepare these organisations. A typical example is the awareness day and supply chain health and safety day that were organised by the researcher. These activities proved to members of the supply chain that the actual intent of the case organisation was not to find culprits, but to establish areas in requiring improvement and then work with concerned organisations to improve by offering practical help and guideline.

Thus, shows that the improvement of health and safety in our organisations are better achieved through a greater involvement of supply chain members. This not only increases the level of trust among organisations, but also effectively reduces the effect(s) that the avoidance of regulators and government agencies by SMEs and poor performing organisations would have had on individual organisations and supply chains. Additionally, this channel serves as an effective channel through which health and safety regulators and government agencies could reach/communicate with these hitherto hard to reach organisations

- offering an insight into how aspects of supply chain management such as collaboration and partnerships could be utilised in the improvement of the health and safety standards of hard to reach organisations

This research work was able to establish that supply chain management principles and the reliance on activities that encourage trust, partnerships, collaboration, empowerment, adequate stakeholder involvement, opportunities for meeting and discussing issue of concern etc, while help to bring those organisations with poor health and safety performance closer to those who have the resources to help them improve. The improvements in relationship with its customers which the case study organisation attributed to their involvement with the project shows that the strategy for management health and safety has shifted from that of punishment and compulsion to persuasion and collaboration.

- developing a framework that not only makes it possible to evaluate critically health and safety strategies in supply chains, but also provides a guidance on the establishment of a structure capable of influencing better health and safety standards in organisations

A systematic management of health and safety with a view to improving performance is not just about publishing health and safety literature, modifying or enacting new laws or regulations. While all these are capable of helping to improve, its effectiveness depends, to a great extent, on the willingness and ability of organisations to abide by these rules that have been established and monitored by an entity that very far away from them. Nonetheless, a better option is the use of a framework or a guide which would compel organisations that carry out an objective assessment of their

health and safety performance, establish those factors that affect a better performance, explore those factors that are capable of bringing about improvement. This is so because, the implementers, the monitors, as well of the designers of this guideline are not far removed from them. The realisation that any poor performance would have a direct effect on them, pushes them to be efficient monitors of any initiative that have been embarked on. Furthermore, rather than rely on the imposition of fines or legal punishments on culprits, the fear of actually forfeiting their status on the preferred list of customers is a better incentive or motivator.

7.2 Critical review of research

This research set out to develop a framework to evaluate critically health and safety strategies in supply chains in the UK. It was envisaged that this framework would ensure that those organisations at the lower tiers of the supply chain (often with little or no resources, expertise, or even desire to adequately manage health and safety) are reached and encouraged to improve on their health and safety standards.

Both empirical and literature findings showed not only a need to improve health and safety standards in organisations, but also a desire by organisations to work collaboratively with their business associates if there were to be any substantial improvements in the health and safety standards in organisations, especially the small and medium sized enterprises. Again, empirical findings presented in Chapter 5 strongly suggest the adoption of collaborative and partnership approach to the evaluation and management of health and safety in supply chains as a means of ensuring improvement in less capable supply chain members.

In as much as the establishment of collaborative relationships between organisations is considered an effective means through which desired improvement in organisations could be attained, this level of improvement can only be realised if there exists a power imbalance (perhaps due to different capabilities, unequal resources, et cetera), among these organisations. There are suggestions that a power imbalance between an organisation and its business associates would affect any supply chain improvement initiative. Nonetheless, the researcher is convinced that the level of trust, commitment, and effective communication channels (which are qualities of a good supply chain network) by far outweigh this flaw. Thus, the use of supply chain network remains a better strategy or option for improving safety and health standards of organisations.

The researcher believes that the framework developed in Chapter 6 has fulfilled both the immediate and underlying intent of this research. The following sections show how the aim and objectives of this research were achieved.

Objective 1: carry out a review of literature on health and safety management in supply chains and small and medium-sized enterprises

This objective was achieved through the detailed literature survey on the fundamentals of health and safety management (Chapter 2), as well as supply chain management strategies and techniques (Chapter 3). This objective was also satisfied in Chapter 1 as well as Appendix L, where the role and contribution of the SME sector to the economy and the implication of its health and standard to the entire economy were discussed.

Objective 2: explain the effect of poor health and safety performance on organisations and analyse factors that inspire health and safety management in organisations

This objective was satisfied through the discussion in Section 1.1, which gave the background of the research and went further to identify the enterprise size band in greater need of intervention. This objective was further satisfied in Appendix L, where it was shown in greater details that organisations in the SME sector generally have poor health and safety standard compared to their larger counterparts. For instance, the discussions in the sections referred to above show that organisations in this enterprise band have limited resources and expertise at their disposal that are capable of bringing about the level of improvement needed. Furthermore, their nature and diversity make them often inaccessible (hard to reach) to health and safety regulators. A further satisfaction of this objective was achieved in Chapters 2 and 3 where it was shown that disruptions in one link of the supply chain undoubtedly impact on the other parts of the chain. The empirical findings presented in Chapter 5 (Figures 5.3.1, 5.4.1, and 5.6.1; Tables 5.3.1, 5.3.2, and 5.6.1) also satisfy this objective.

Objective 3: analyse health and safety improvement strategies

The introduction to strategies or initiatives (Section 1.1) that were used in the past to improve health and safety standards in organisations fulfils this objective. It was highlighted within this Section that these strategies failed to produce the desired result either because they were not tailored to the specific needs of organisations, or because organisations from different enterprise sectors with divergent health and safety needs were assembled together. Chapter 2 (specifically Sections 2.6 and 2.7) contains a discussion of the different aspects and requirements of a health and safety

management system as well as approaches to health and safety management. In Chapter 3 (specifically Section 3.8), approaches such as compulsion or coercion and persuasion, through which improvements in organisations can be achieved were discussed.

Although preference was given to persuasion based strategies in this research, it is recognised that there are situations in which organisations may be compelled (directly or indirectly) to improve on their standards. Nonetheless, the empirical findings contained in Chapter 5 (Sections 5.4 and 5.5) suggest that even in these situations it should be realised, that in principle, compulsion would never achieve the level of cooperation needed to ensure that suppliers comply with the demands being imposed on them by their customers. It is recognised that subtle forms of persuasion bordering on “coercion” may indeed be necessary for this model to succeed.

Objective 4: establish a basis for the development of a framework to evaluate critically health and safety strategies in supply chains in the UK, based on theory, ideal and best practices

This objective was achieved first in Chapter 1, where the background to the research study was presented. The achievement of this was realised through a justification of the research by establishing a prevalence of poor health and safety standards in organisations, especially those at the lower tiers of the supply chain. It further showed that previous initiatives failed to bring about the desired level of improvement in these organisations, which are predominantly SMEs. This objective was further achieved in Chapter 2 through an in-depth discussion of the core elements of a health and safety management system. The discussions in this chapter highlight the

importance of developing a health and safety management system which details an organisational structure necessary for planning, (including risk assessment and audit), implementing monitoring, measuring, and reviewing performance of a system designed to reduce the level and fatality of accidents in organisations.

Having thus established that initiatives and strategies used in the past to improve health and safety performance were not effective, Chapter 3 discussed the fundamental aspects of supply chain management, such as the establishment of partnerships and collaborations among organisations, as a way of improving performance and capability of organisations. In Sections 3.3 through to 3.5, elements such as commitment, power, training, empowerment, communication, clearly defined objectives, mutual relationship as opposed to adversarial one, et cetera, which are considered as critical success factors in any supply chain relationship were identified and discussed. These factors not only formed major aspects of the framework that was developed, but were also integral to the successful implementation of the framework in the case study supply chain.

Objective 5: establish perception and attitude to supply chain health and safety management

This objective was achieved partly in Section 1.1, and in greater detail in Chapter 5, where analyses of responses to the research survey that was carried out showed that poor health and safety record impacts on the both the image and operations of organisations. It was further shown in Chapter 5 that there was a need for larger organisations to offer improvement support to their suppliers, first to help them improve their health and safety standards, and secondly to protect themselves from

the negative impact of health and safety performance of their suppliers/contractors. It established through the research survey, that although there was a strong desire by organisations to cascade improvement ideas down their supply chain, they needed help in determining the most effective means to achieve this. Subsequently, the discussions in Section 5.7, by advocating the utilisation of collaboration and partnership principles, as good strategies for improving health and safety standards in organisations, is a further fulfilment of this objective.

Objective 6: produce a conceptual framework based on ideal and best practices as well as theory that may be used to evaluate critically health and safety strategies in supply chains in the UK

The successful development of a framework that is based on theory, ideal and best practices was facilitated by the research approach adopted. The adoption of triangulation research approach, discussed in Chapter 4, ensured that the researcher underpinned theoretical observations and comments, contained in Chapters 1 to 3, with empirical evidences presented in Chapter 5. The discussions in these Chapters (1 to 3, and 5) are such that the outcome of the research is both valid and generalizable, with substantial practical implications.

It is recognised that the validity and generalizability of findings and outcome of this study may be questioned on the basis that the case study supply chain used could not have been representative of the UK supply chains. The researcher however, strongly maintains that the findings and outcome of this research are as valid as they are generalizable because the validity of a study is judged by the quality of the emergent theory rather than by its representativeness (Section 4.4). Furthermore, the clarity of

the theoretical reasoning (based on recognised research methodology, supply chain management and performance improvement techniques, as well as health and safety principles) applied in this research ensured that the findings and outcome are valid, capable of being generalised, and subsequently representative of other organisations.

The need for the development of a framework such as this was shown in Chapter 1 where it was first shown that efforts made in the past to improve the health and safety performance of organisations, especially SMEs, using initiatives such as the good neighbourhood scheme, were ineffective. There were further observations of the need to try other strategies such as the use of supply chain influences. Thus, both the need for and the outcome from this project are practically and theoretically justifiable.

In view of the above results and feedbacks, it is fair to conclude that the aim and objectives of this research have been achieved. This conclusion does not however claim that there are no rooms for further improvement.

7.3 Further research

Although it has been possible to develop a framework capable of bringing about improvement in the evaluation of health and safety strategies in supply chains in the UK through this research project, it is recognised that this has been a purely academic research, carried out under peculiar academic constraints of time, personal and financial resources.

It is therefore recommended that:

1. the survey questionnaire that was used in this study be modified. It is suggested that the new survey should explore more the issue of perception and attitude to health and safety management. It is further suggested that this line of inquiry should follow adopt the survey questionnaire shown in Appendix O, or its modified version. This is to ascertain if the perception, impact of health and safety as well as strategies are different from what has been presented in this work, due to the difference on style of questioning/questions
2. this framework be tested in a supply chain, industrial sector, and region quite different from the ones used in this study. This is with a view to further proving that, or ascertaining if it is capable of producing the same result when used in a different environment
3. further tests to be carried should go beyond the first tier suppliers and sub-contractors. This recommendation is because meaningful improvement and benefits could only be realised when those organisations far away from the contracting organisations are also encouraged and helped to improve on their performances. Furthermore, it is only through this way that the effectiveness of using the supply chain to instigate performance improvement across an entire supply chain can be assessed
4. this framework be applied to any other aspect of an organisational practice or operations, where improvement is needed. This is because although this research concentrated on health and safety improvement, the framework is not exclusive to this area; it can be used in other aspects of an organisation

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APPENDIX A: Research methods and design

A.1 Research design

Research is a systematic investigation aimed at providing answers to a problem; and this could be achieved either by using a scientific empirical method or the naturalistic phenomenological method (Burns, 2000). These two research methods will be discussed briefly below with a view to identifying the best method for this type of study.

A.2 The traditional scientific method

The scientific method, also known as the *nomothetic approach*, uses quantitative research methods to establish general laws or principles. Burns (2000) observes that it is built upon premises and beliefs which assume that data must yield proof or strong confirmation in probability terms, of a theory or hypothesis in research setting. Burns further noted that the truth within this paradigm tends to be fixed and singular, reflective of causal and factual view of reality; similarly in traditional social science researches, it is believed that only a systematic, quantitative approach to generating and testing ideas is adequate.

There are five steps involved in any scientific research approach. These according to (Robson, 2002) include:

1. deducing a hypothesis (which is testable) from the theory
2. expressing the hypothesis in operational terms which propose a relationship between two specific variables, and indicating how the variables are to be measured
3. testing the operational hypothesis through experiment or other empirical means
4. examining the specific outcome of the enquiry which will either confirm the theory or indicate a need for modification

5. modification of the theory as appropriate to accommodate the findings, and subsequent testing of the revised theory

Notable characteristics of the scientific research approach have been discussed in earlier literature such as Burns (2000), and these include the following:

Control: Control enables a researcher to identify the causes to his or her observations, and is necessary in order to provide unequivocal answers to why something happens, what causes it, and the conditions under which it occurs. It is thus seen as being the single most important element in scientific methodology

Operational definition: In order to avoid confusions in meaning and communications, it is necessary that terms used in must be defined by the steps and operations which have been used to measure them.

Replication: For data or observations from an experiment to be reliable, the same results must be obtained if the study is to be repeated; otherwise the researcher's descriptions and explanations are likewise unreliable and therefore useless.

Hypothesis testing: A researcher using the scientific approach would systematically create a hypothesis, which he or she subjects to empirical test.

The scientific research method has notable strengths and weaknesses. Amongst its strengths are its precision (which is achieved through design and sampling), and accuracy, achieved through quantitative and reliable measurement. Burns (2000) further notes that the use of quantitative data permits statistical analysis thus

providing answers which have a firmer basis than those arrived at using alternative methods.

One of the weaknesses of the scientific method stems from the fact that human beings are acted on by a variety of environmental forces which influence the way they interpret and respond to issues, such that we cannot predict how particular individuals may respond in different environments and circumstances. Burns (2000) further argues that the scientific approach cannot be totally objective since subjectivity is involved in the very choice of a problem, as well as the interpretation of the results. Continuing, Burns notes that the scientific approach denigrates human individuality and ability to think, and its mechanistic ethos tends to exclude notions of freedom, choice and moral responsibility. Again, in the scientific approach, quantification becomes an end in itself instead of seeking to explore human conditions, thus it fails to take account of people's unique ability to interpret their experiences, construct their own meaning and act on this. Consequently, it leads to an erroneous assumption that facts are true and the same for all people all the time.

Furthermore, the scientific research method fostered a naïve faith in the substantiality and ultimacy of facts; and since human judgement is so profoundly a part of every human act, the supposed objectivity of science is, in fact, a delusion (Burns, 2000). Subsequently, towards the end of the 1970s more and more scholars began to realise that "reality cannot be subsumed within numerical and classification" and that there was a need to use more than one method in researches since no one methodology can answer all questions and provide insight on all issues.

A.3 The qualitative approach

Qualitative research methods are concerned with processes rather than consequences, with organic wholeness rather than independent variables, and with meanings rather than behavioural statistics; it is also considerably relevant since there can be little meaning, impact or quality in an event isolated from the context in which it is found (Eisner, 1979). The qualitative approach to research, which include action research, case studies, and ethnography, tend to be characterised by being context specific, collaborative and interventionist.

Qualitative research recognises the validity of multiple meaning structures and holistic analysis in contrast to the criteria of reliability and statistical compartmentalisation of quantitative research Burns (2000). Burns further notes that qualitative methodologies provide avenues that can lead to the discovery of deeper levels of meaning because qualitative investigations tend to be based upon recognition of the importance of the subjective, experiential ‘lifeworld’ of human being.

Traditionally empirical research had adopted three research strategies – the experiment, the survey, and the case study (Robson, 2002). The experiment is used in studies that ask “how” and “why” questions; it analyses the consequences of manipulating one variable against another one. The survey strategy on the other hand can be used to answer most research questions. However, there is still a level of difficulty in using it to address the “why” research question. The survey strategy helps the research to get answers answer to research questions through a methodical collection of information from a group of people or organisations. In instances where

a deeper knowledge about a single case or a small number of related cases is required, the case study strategy is mostly adopted. It addresses “how” and “why” events happen the way they do.

Research studies either try to explore, describe or explain events, thus contributing to existing knowledge. This study has been designed with a view to seeking new insights and to find out what is happening within a named business sector, by asking questions to a given group. It is also aimed at explaining the effects of client’s pressure on the performance of its suppliers and sub-contractors. Thus, it seeks to answer “how” the exertion of this pressure happens and “why” it has the potential to bringing about improved performance of the SME business sector.

Although Yin (1994) observes that each of these strategies mentioned above could be used for exploratory, descriptive, or explanatory studies, (Robson, 2002) suggests that case studies are appropriate for exploratory work, surveys for descriptive work, and experiments better suited to explanatory studies. To fully realise the aims and objectives of this study, the above mentioned strategies would be used, though to varying degrees. Consequently, it would be appropriate to adopt a strategy, such as triangulation, that would incorporate elements of these strategies.

An evaluation of the effectiveness of using supply chain management principle (techniques) in initiating and sustaining performance improvement within the construction industry is a fairly an understudied area. Commenting on the choice of the most appropriate strategy for any research study, Yin (1994;Robson, 2002) notes

that the choice of the most appropriate strategy is influenced by factors such as the degree of control required by the researcher, the need to consider either current or historical events, as well as the type of research questions being asked.

As is evident from the research aims and objectives, the main subject of the study is performance improvement, using the supply chain mechanism. Again, because supply chain management has been associated more with the manufacturing sector than it is with the construction industry, the research would be asking “how”, “why”, “who”, “what”, “how much” etc questions in order to fully understand the effects of a better application of supply chain management techniques to the overall performances of business organisations. Considering the fact that these questions are characteristics of all the research strategies already discussed, the research methodology would be greatly influenced by the level of control to be exercised by the researcher, as well as on the need to focus the study on either current or historical events.

As pointed out by Millet (2002) , exercising control over course of events by the researcher would greatly hinder the illustration of what actively exists in practice, thus the experimental strategy does not seem to be the best strategy as it requires the researcher to exercise a certain level of control of what course of events. Additionally, it focuses the research on current events only. A research carried out using the survey strategy on the other hand seems appropriated because the researcher, by sampling a cross-section, of the business organisations, would ascertain those variables as well as the extent to which these variables influence organisational practices. Similarly, the case study strategy seems suitable because it does not require any control by the researcher over events. Again, although it usually focuses on

current events, it is not imperative that this should be the case. From the fore-going, the survey and case study strategies seem to be best suited for this kind of study.

Consequent to the above, the best approach to the study would be a method which incorporates both the survey and the case study strategies. The survey aspect of the study would help in establishing the constraints as well as motivations for health and safety improvement in organisations, while the case study aspect of the research would, through a semi-structured interviews and meetings, establish how improvement activities are initiated and executed in organisations. It would also analyse the impact of better supply chain relationship on the performance improvement in organisations.

A.4 The survey as a research strategy

Robson (2002) describes a survey as a collection of standardized information from specific population, or some sample from one, usually but not necessarily by means of questionnaire or interview; and the interest in not on the individual per se, but on profiles and generalized statistics drawn from the total sample and generalised to the population. Most often, a very small amount of information is collected from any one individual, with subsequent little or no attempt at manipulating the variables or controlling the conditions. Surveys are best suited to descriptive studies which aim to ascertain the population exhibiting a particular trait. It is also used to explore aspect of a situation, or to seek explanation and provide data for testing hypothesis.

Surveys are sub-divided into cross-sectional studies and longitudinal research. A cross-sectional study is an instance where the focus of the study is on the make-up of the sample and the state of affairs in the population at a finite point in time. The

validity of this is strongly dependent on the extent to which a very large, representative and non-biased sample is chosen. On the other hand, longitudinal research is interested in describing and or assessing the change or development over a period of time that has taken place within a given population. Robson (2002) observes that this form of research is time consuming and is greatly hindered by the inaccessibility or non-availability of people involved in the study due to geographical moves or unwillingness to cooperate any further with the study.

A.5 The case study as a research strategy

A case study according to Robson (2002) is a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence. He further notes that a case study:

1. is a strategy, implying that it is an approach, and not a method (for instance interview, observation)
2. is concerned with research taken in a broad sense and including for example, evaluation
3. is particular to a case and what kind of generalizations that can be drawn from the case and how this might be achieved
4. is focused on a phenomenon in context, especially in situations where there is no clear demarcation between the context and the phenomenon
5. uses multiple methods of evidence or data collection

Yin (1994) further observes that a case study is primarily a research strategy intimately connected to the research questions; and while questions like “what” and “how many” are often answered through surveys, like “in what way” and “why” are best answered using a qualitative case study. Continuing, Yin (1994) also argued

flexibility and adaptiveness are necessary research skills because the procedures and techniques used in a study might be modified during the period of an investigation; thus it is important that a unit of analysis is also determined in order to avoid collecting and analysing even things that are not necessary.

Although there were some adverse criticisms of case study as a research strategy from author such as Campbell and Stanley (1963), these criticisms have since been recounted by some of these authors, as evidenced in Cook and Campbell (1979) who described a case study as a fully legitimate alternative to experimentation in appropriate circumstances. Robson (2002) went further to note that a major aspect of this concession is the admission that a case study is not a flawed experimental design; it is a fundamentally different research strategy with its own designs.

A.6 Choice of research methodology

There are criticisms of the research strategies and approaches discussed in the preceding chapters. These criticisms are capable of affecting the degree of reliability of the conclusion drawn from this research. The two most important threats to the reliability of any research findings are the issue of generalizability and validity of the findings.

Generalizability: Robson (2002) as well as Yin (1994) note that a major concern with the results from a case study is the issue of generalization of the findings across populations. This is known as generalizability, or external validity according to Campbell and Stanley (1963). Factors that can seriously threaten the external validity of any research finding have been discussed by LeCompte and Goetz (1982). These

include the possibility that the findings may be specific to the group studied; it could be dependent on or specific to particular context in which the study took place; it could be influenced by the historical experiences often case under study; or the particular construct studied may be specific to the group studied.

With reference to this particular study, the issue of generalizability would surface when an attempt to generalise the research finding across all sectors of the economy is made. However, by studying a sector that is still embracing supply chain management, the researcher is confident that if client influence is significant in this sector, then it would have a far stronger influence in another sector, such as the manufacturing, with a more advanced supply chain management strategy.

Validity: Another major concern with results from the results of a research study is that of validity of the conclusions drawn (Robson, 2002; Yin, 1994). Thus, it is pertinent that any source doubts over the results of the research should be addressed by the researcher at the initial stages of the study. According to Robson (2002), the validity of research finding can be greatly affected by subject bias, subject error, observer error, as well as observer bias.

There is a tendency for subject bias in this study which not only looks at the kind of relationship between a client and its suppliers or sub-contractors, but also the level of health and safety management within these organisations. Consequently, there is a possibility that respondents would give biased answers to question, perhaps in a bid to cover their below standard performance in these areas. To avoid this type of situation,

it is important that the researcher reassures the respondents of the confidentiality of their responses. It was also necessary for the researcher to re-assure respondents that the study was purely an academic exercise and was not aimed at exposing poor performers.

Observer error results from a biased view being taken by the researcher or observer. To avoid this situation, the researcher made use of interview schedules and also recorded all interviews with a tape recorder. Observer bias is also another threat to the validity of research findings. It affects the interpretation drawn from the research data, and could be avoided through the use of a third party in validating the conclusions drawn.

After a careful consideration of the research aims and objectives and the best approach to adopt in realising them, the researcher is convinced that this would be best achieved through a combination of research survey and case study. This decision has been based mostly on the need to achieve the best fit between the research questions being asked and the method to find answers to them

The above notwithstanding, the sections above which discussed the major threats to the reliability of any research finding vis-à-vis validity and generalizability of the findings, makes for a further consideration of the way in which these identified lapses in the chosen methods could be addressed. Hence, the researcher is convinced of the best method to use in this instance is that of research triangulation.

APPENDIX B: Sample of comments received during questionnaire pilot

Date sent: **Wed, 28 Jan 2004 15:52:02 +0000**
From: **Ike Diugwu <cey199@coventry.ac.uk>**
Subject: **Survey questionnaire**
To: **D.Holt@mdx.ac.uk**

Happy New Diane,

I have attached herewith a draft of my survey questionnaire for your critique. I very much count on your experience in guide me to the right direction.

Most of the questions are targeted at SME companies, while a few such as those in section F are targeted at the larger companies.

My aim is to ascertain how far SMEs are aware of health and safety issues, their sources of information, motivations, constraints, as well as the influence of their customers on the safety management.

Some of the questions have been taken from your work, as I intend to compare the attitude to health and safety management with that of environmental management

I look forward to receiving your candid views.

Thanks and regards.

Ike

--

Ike Diugwu
Room 106, Sir Frank Whittle Building
School of Engineering
Coventry University
Priory Street
COVENTRY CV1 5FB
UK

Tel.: +44 (0)24 7688 8940

Email: cey199@coventry.ac.uk

Overall looks
okay but need to
think about points
I've raised.
~~Perhaps~~ This then
needs to be
piloted on a
small sample first

look correct
with
① applicability of question
② any confusing question

Diane Holt

-- 1 --

Thu, 5 Feb 2004 17:46:17

③. time taken to complete.

7669

Recipient's Name
Address of Recipient

28 January 2004

Dear

Research survey - a confidentiality statement

I am undertaking a research on the use of the supply chain network as a strategy for improving the health and safety management practices in small to medium enterprises.

To achieve this aim, I am conducting a confidential survey of various industry groups and sizes and would like you to complete the attached questionnaire.

I trust that you will answer all the questions, being as open and honest as you can.

This letter also serves as a confidentiality agreement with you and the information supplied purely for the purposes of this research and would not be disclosed to any other party not connected with the research. It would be appreciated you sign the duplicate copy and return same to me with your completed questionnaire.

Thank you for your co-operation.

Yours sincerely

Ikechukwu Diugwu

Respondent's Name, Signature and Date

When you can
interpret these
using various
reduce bias
by guessing.

If you don't know
the answer please
indicate. don't know
or if this is
not applicable
n/a

as it may be for
10/11/04

SECTION A: About the Company

A.1. What is the name of your company? _____

A.2. How many employees does the company have?

Full Time

☐

Part Time

☐

A.3. To which of these industries does your business belong? (Please tick appropriate box)

☐

Agriculture

Extractive & utility supply

☐

Construction

Manufacturing

☐

Service

Local Authority Enforced Industries

☐

Others _____

A.4. Which of the following levels of management does your company have?

☐

Director/Managing Director

Factory Manager

☐

Process manager/team leader

Supervisors

☐

Foreman

Operative

A.5. How important does your company rank health and safety management?

☐

Extremely important

Slight

☐

Important

Not at all

☐

Moderate

SECTION B: HEALTH AND SAFETY MANAGEMENT AWARENESS

B.1. Who is responsible for Health & Safety management in your company? (Job Title)-

B.2. How many hours a week are spent on this activity? _____

B.3. Who else is involved? (Please tick all applicable boxes)

- | | |
|---|--|
| <input type="checkbox"/> Senior Management | <input type="checkbox"/> External Consultants |
| <input type="checkbox"/> Safety Committee | <input type="checkbox"/> Trade Unions |
| <input type="checkbox"/> Industrial Network | <input checked="" type="checkbox"/> Regulatory authorities |

*then COSH
reference West
London which
you should
know about*

B.4. Which of the following Health and Safety legislation are you aware of that affects your business? (Please tick applicable box or boxes)

- | | |
|--|--|
| <input type="checkbox"/> The Management of Health and Safety at Work Regulations | <input type="checkbox"/> Reporting of Injuries, Diseases and Dangerous Occurrences Regulations |
| <input type="checkbox"/> Workplace (Health, Safety and Welfare) Regulations | <input type="checkbox"/> Noise at Work Regulations |
| <input type="checkbox"/> Health and Safety (Display Screen Equipment) Regulations | <input type="checkbox"/> Electricity at Work Regulations |
| <input type="checkbox"/> Personal Protective Equipment at Work Regulations | <input type="checkbox"/> Control of Substances Hazardous to Health Regulations 2002 (COSHH) |
| <input type="checkbox"/> Provision and Use of Work Equipment Regulations | <input type="checkbox"/> Chemicals (Hazard Information and Packaging for Supply) Regulations |
| <input type="checkbox"/> Manual Handling Operations Regulations | <input type="checkbox"/> Construction (Design and Management) Regulations |
| <input type="checkbox"/> Health and Safety (First Aid) Regulations | <input type="checkbox"/> Gas Safety (Installation and Use) Regulations |
| <input type="checkbox"/> The Health and Safety Information for Employees Regulations | <input type="checkbox"/> Control of Major Accident Hazards Regulations |
| <input type="checkbox"/> Employers' Liability (Compulsory Insurance) Act | <input type="checkbox"/> Dangerous Substances and Explosive Atmospheres Regulations |

*one of the
key issues
in SME's
might
be lack
of knowledge
of certain
pieces of
legislation
compare
responses
between
orgs in
same
sectors*

B.5. How many lost time accidents have you had in the past five years?

B.6. Who enforces Health and Safety in your business sector?

*they all say
the same thing.*

- ☐ Health and Safety Executive (HSE)
- ☐ Health and Safety Executive/Local Authority Enforcement Liaison Committee (HELA)
- ☐ Don't know

B.7. Have you ever been visited by a health and safety enforcement agent?

Yes

☐

No

☐

If "Yes", what was the purpose of the visit?

Friendly chat

Improvement notice

Advice

Prohibition notice

☐

B.8. Which of the following do you have in place for managing health and safety in your company (Please tick all applicable or boxes)

☐

Written policy statement

Safety audit system

☐
☐
☐

Risk assessment

In-house

Consultant

Package

☐

Training programmes

Health surveillance

☐

Accident/Incident reporting procedures

Written safe working procedures

☐

Permit to work

Incentive schemes

☐

Other (please specify)

B.9. How do you get information on Health and Safety issues?

☐

Trade Associations

Local Authority

☐

Health and Safety Executive

Head Office

☐

Industrial network

Others

Please describe
B.10. How does the health and safety legislation impact on your company?

What do you mean by
'impact'?

- on staff
- on operations
- on cost
- on image?

What is the impact of H & S legislation
on your
Business Image

☐ ☐ ☐ ☐

Business Operatn

☐ ☐ ☐ ☐

~~How does Health and Safety legisla~~

B.10 Do you think that Health and Safety legisla
tion affects your

Business Image

YES	NO
<input type="checkbox"/>	<input type="checkbox"/>

Business Ops

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

Pls describe the impact of

SECTION C: GENERAL HEALTH AND SAFETY POLICY

	Do	Do Not	Intend to within 12 months	No response
We have a formal health and safety policy that describes roles and responsibilities				
We have a policy that requires written accident/incident reports (injuries, property damages, near misses, fires, explosions, etc)				
We are bound by external health and safety guidelines				
We conduct accident/incident investigations				
We document, investigate, and discuss near miss accidents				
We consider ethical and human rights/welfare issues informally in our operational issues				
We consider ethical and human rights/welfare issues formally in our operational issues				

SECTION D: MOTIVATIONS FOR HEALTH AND SAFETY MANAGEMENT

1 = negligible, 2 = small extent, 3 = moderate extent, 4 = great extent, 5 = very great extent	1	2	3	4	5
Influence of UK's current health and safety legislation					
EU's current health and safety legislation					
Maintaining of presenting a health and safety or socially responsible image					
To reduce the health and safety risks associated with our operational practices					
To reduce public's perception of the health and safety risk associated with our company					
Culture of the organisation promotes health and safety responsibility					
To perform better than our competitors or equivalent companies					
The CEO's commitment to health and safety improvement <i>of organization</i>					
Requirements of companies that you supply to					
Public opinion/societal expectation					

*do factor
on their
to group
into
Hemer*

1 = negligible, 2 = small extent, 3 = moderate extent, 4 = great extent, 5 = very great extent	1	2	3	4	5
Encouragement from companies that you supply to					
A strategy for reducing cost					
Provides new market opportunities					
To match the activities of competitors					
Pressure from individual consumers/service users					
Pressure from the insurance industry					
Pressure from shareholders or investors (if applicable)					
Influence of the companies that supply goods and services to your company					
Pressure from employees					
Pressure from Trade Unions					
To reduce possible health and safety impact posed by the company					
To reduce possible risk posed by the company					

SECTION E1: CONSTRAINTS TO HEALTH AND SAFETY MANAGEMENT

- ☐ Lack of financial benefit Difficulty in assessing suppliers health and safety performance in a cost effective and efficient manner
- ☐ Lack of management commitment Others _____
- ☐ Lack of resources (personnel etc)

☐ lack of knowledge of details & implications

do you need to distinguish between formal (legislative) H&S requirements or (add on) voluntary?

SECTION F: SUPPLIER ASSESSMENT, EVALUATION AND DEVELOPMENT

F.1. Does your company use suppliers? Yes ☒ No ☐

F.2 Assessment of suppliers' health and safety performance

	Do	Do Not	Intend to within 12 months	No response
We assess the health and safety standard and performance of our suppliers informally in our assessment process				
We assess the health and safety standard and performance of our suppliers in a formal process				
We set health and safety criteria that our suppliers must meet				
Health and safety performance forms part of our sub-contract conditions				
In choosing our supplies, health and safety performance rates as highly as cost				

F.3 Health and Safety Management support available to our suppliers

	Do	Do Not	Intend to within 12 months	No response
We communicate to our suppliers our health and safety and or/ethical criteria form goods and services we buy				
We run workshops/seminars to educate our suppliers				
We educate our suppliers through written materials				
We (or someone on our behalf) go into our suppliers' companies to help them improve health and safety performance				
We have received health and safety guidance from our customers				
We have benefited from educational workshops and visits by our customers to educate us on what health and safety improvements can be made				

(X) everyone has supplier safety - maybe it's about dependency on them
- perhaps have no boxes
1 2-5 6-10 11-20
1 1 1 1
up to quite high number.

SECTION G: INDUSTRIAL NETWORKS

	Do	Do Not	Intend to within 12 months	No response
The company is part of an industry specific partnerships that shares good practice/lobbying				
The company is part of a network that shares health and safety or ethical good practice or information				
The company is part of a supply chain initiative that is involved in an active dialogue with suppliers and/or stakeholders				

What is not here is how
 H&S info is disseminated
 through the company
 ie does it permeate through
 all levels?
 or are the responses really
 from top up & does this
 filter through.

APPENDIX C: Research health and safety survey questionnaire

SECTION A: ABOUT THE COMPANY

A.1. What is the name of your business? _____ (Optional)

A.2. How many employees does your business have? (if 250 and above, please also complete sections G and H)

No of Employees	Full Time
1 – 9	<input type="checkbox"/>
10 – 49	<input type="checkbox"/>
50 – 249	<input type="checkbox"/>
250 and above	<input type="checkbox"/>

A.3. To which of these industries does your business belong?

- | | |
|---------------------------------------|--|
| <input type="checkbox"/> Agriculture | <input type="checkbox"/> Extractive & utility supply |
| <input type="checkbox"/> Construction | <input type="checkbox"/> Manufacturing |
| <input type="checkbox"/> Service | <input type="checkbox"/> Others |

SECTION B: HEALTH AND SAFETY MANAGEMENT AWARENESS

B.1 Do you think that poor health and safety record could impact on your

	Yes	No
Business Operations	<input type="checkbox"/>	<input type="checkbox"/>
Business Image	<input type="checkbox"/>	<input type="checkbox"/>

Please describe

B.2 Do you have an appointed health and safety representative in your company? Yes ☐ No ☐

B.3 What percentage of the total working week of the person in (B2) above is spent on Health & Safety management duties?

- | | |
|------------------------------------|-------------------------------------|
| <input type="checkbox"/> 0 – 9 % | <input type="checkbox"/> 50 – 89 % |
| <input type="checkbox"/> 10 - 49 % | <input type="checkbox"/> 90 – 100 % |

B.4 Who else is involved in your company's health and safety management?

- | | |
|--|---|
| <input type="checkbox"/> Senior Management | <input type="checkbox"/> External Consultants |
| <input type="checkbox"/> Health and Safety Committee | <input type="checkbox"/> Trade Unions |
| <input type="checkbox"/> Industrial Network | <input type="checkbox"/> Others _____ |

B.5 How many lost time accidents have you had in the past 12 months? _____

B.6 Who enforces Health and Safety in your business sector?

- ☐ Health and Safety Executive (HSE)
☐ Local Authority's Environmental Health Department
☐ Don't know

B.7 Have you ever been visited by a health and safety enforcement officer? No
 If "Yes", what was the purpose of the visit?

- ☐ Routine inspection ☐ Accident/incident investigation
☐ Complaint investigation ☐ Advice

B.8 What was the outcome of the visit?

- ☐ Improvement notice ☐ Prohibition notice ☐ Prosecution
☐ Formal caution ☐ Verbal/written advice ☐ Other

B.9 Which of the following Health and Safety legislation are you aware of that affects your business? (Please tick applicable box or boxes)

- | | |
|--|--|
| <input type="checkbox"/> The Management of Health and Safety at Work Regulations | <input type="checkbox"/> Reporting of Injuries, Diseases and Dangerous Occurrences Regulations |
| <input type="checkbox"/> Workplace (Health, Safety and Welfare) Regulations | <input type="checkbox"/> Noise at Work Regulations |
| <input type="checkbox"/> Health and Safety (Display Screen Equipment) Regulations | <input type="checkbox"/> Electricity at Work Regulations |
| <input type="checkbox"/> Personal Protective Equipment at Work Regulations | <input type="checkbox"/> Control of Substances Hazardous to Health Regulations 2002 (COSHH) |
| <input type="checkbox"/> Provision and Use of Work Equipment Regulations | <input type="checkbox"/> Chemicals (Hazard Information and Packaging for Supply) Regulations |
| <input type="checkbox"/> Manual Handling Operations Regulations | <input type="checkbox"/> Construction (Design and Management) Regulations |
| <input type="checkbox"/> Health and Safety (First Aid) Regulations | <input type="checkbox"/> Gas Safety (Installation and Use) Regulations |
| <input type="checkbox"/> The Health and Safety Information for Employees Regulations | <input type="checkbox"/> Control of Major Accident Hazards Regulations |
| <input type="checkbox"/> Employers' Liability (Compulsory Insurance) Act | <input type="checkbox"/> Dangerous Substances and Explosive Atmospheres Regulations |

B.10 Which of the following do you have in place for managing health and safety in your company? *(Please tick all applicable or boxes)*

- | | |
|---|--|
| <input type="checkbox"/> Written policy statement | <input type="checkbox"/> Safety audit system |
| <input type="checkbox"/> Risk assessment | <input type="checkbox"/> Conducted by your company’s personnel |
| | <input type="checkbox"/> Conducted by a Consultant |
| <input type="checkbox"/> Training programmes | <input type="checkbox"/> Health surveillance |
| <input type="checkbox"/> Accident/Incident reporting procedures | <input type="checkbox"/> Written safe working procedures |
| <input type="checkbox"/> Permit to work | <input type="checkbox"/> Incentive schemes |
| <input type="checkbox"/> None of these | |

B.11 How do you keep informed on Health and Safety issues and regulations?

- | | |
|---|---|
| <input type="checkbox"/> Trade Unions | <input type="checkbox"/> Local Authority |
| <input type="checkbox"/> Health and Safety Executive/Web site | <input type="checkbox"/> Industrial network/safety groups |
| <input type="checkbox"/> Health and safety journals | <input type="checkbox"/> Head office |

SECTION C: GENERAL HEALTH AND SAFETY POLICY

	Yes	No
C.1 Do you have a formal health and safety policy that describes roles and responsibilities?	<input type="checkbox"/>	<input type="checkbox"/>
C.2 Do you have a policy that requires written accident/incident reports (injuries, property damages, near misses, fires, explosions, etc)?	<input type="checkbox"/>	<input type="checkbox"/>
C.3 Do you conduct accident/incident investigations?	<input type="checkbox"/>	<input type="checkbox"/>
C.4 Do you document, investigate, and discuss near miss accidents?	<input type="checkbox"/>	<input type="checkbox"/>

SECTION D: MOTIVATIONS FOR HEALTH AND SAFETY MANAGEMENT

How do the following contribute to your motivations for managing health and safety effectively?

1 = negligible, 2 = small extent, 3 = moderate extent, 4 = great extent, 5 = very great extent		1	2	3	4	5	N/A
D.1	Influence of UK's current health and safety legislation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.2	Fear of prosecution for health and safety offences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.3	To protect the company's/industry's image or reputation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.4	To reduce possible health and safety impact posed by the company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.5	Culture of the organisation promotes health and safety responsibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.6	The manager's commitment to health and safety improvement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.7	To improve our competitiveness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.8	Requirements or encouragement from our customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.9	Pressure from our suppliers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.10	To reduce insurance premium	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.11	Pressure from shareholders or investors (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.12	Pressure from employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D.13	Pressure from Trade Unions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION E: CONSTRAINTS TO HEALTH AND SAFETY MANAGEMENT

E.1 Which of the following affects your ability to effectively manage health and safety in your company?

<input type="checkbox"/> Lack of financial benefit	<input type="checkbox"/> Complex health and safety legislation
<input type="checkbox"/> Lack of management commitment	<input type="checkbox"/> Lack of support
<input type="checkbox"/> Lack of resources (personnel/financial)	<input type="checkbox"/> Lack of knowledge of details and implications

SECTION F: HEALTH AND SAFETY IMPROVEMENT SUPPORT FROM INDUSTRIAL NETWORK/CUSTOMERS

	Yes	No
F.1 Is your company part of an industry specific partnership that share good practice/lobbying	<input type="checkbox"/>	<input type="checkbox"/>
F.2 Is your company part of a network that shares health and safety good practice or information	<input type="checkbox"/>	<input type="checkbox"/>
F.3 Is your company part of a supply chain initiative that is involved in an active dialogue with suppliers and/or stakeholders	<input type="checkbox"/>	<input type="checkbox"/>
F.4 Would you be interested in participating in a supply chain initiative as a means of achieving improvements in health and safety in your company?	<input type="checkbox"/>	<input type="checkbox"/>
F.5 We have received health and safety guidance from our customers	<input type="checkbox"/>	<input type="checkbox"/>
F.6 We have benefited from workshops and visits by our customers to educate us on what health and safety improvements can be made	<input type="checkbox"/>	<input type="checkbox"/>

SECTION G: SUPPLIER ASSESSMENT AND EVALUATION

(Complete this section only if your suppliers' performance is critical to your own performance/operations)

G.1 How many suppliers do your company have?

	Yes	No
G.2 We assess the health and safety standard and performance of our suppliers informally in our assessment process	<input type="checkbox"/>	<input type="checkbox"/>
G.3 We assess the health and safety standard and performance of our suppliers in a formal process	<input type="checkbox"/>	<input type="checkbox"/>
G.4 We set health and safety criteria that our suppliers must meet	<input type="checkbox"/>	<input type="checkbox"/>
G.5 Health and safety performance forms part of our sub-contract conditions	<input type="checkbox"/>	<input type="checkbox"/>
G.6 In choosing our suppliers, health and safety performance rates as highly as cost	<input type="checkbox"/>	<input type="checkbox"/>

**APPENDIX D: Prohibition notices issued by HSE for 2003/2004 period
(Health and Safety Executive, 2005) (removed for
copyright reasons)**

**APPENDIX E: Fatal injuries to employees in the private sector for
2003/2004 period (Source: Health and Safety Executive,
2004) (removed for copyright reasons)**

**APPENDIX F1: The invitation letter sent to delegates of the 26 January
2005 event**

REF:

<Address1>, <Address 2>
<Town> <Post Code>

Date

FAO <Name>

Dear <Name>

Supply Chain Workshop – Coventry University 26 January 2005 – 13:00 16:00

We invite you to join us for the above event which heralds Shaylor Construction's programme to develop closer functional links with our supply chain.

This event, which is open only to selected supply chain members within whom we have a high degree of trust and confidence, will provide access to the skills and knowledge required to enter in to Partnership arrangements with ourselves and others.

Developed in association with Coventry University the Workshop will provide an update on progress within the Shaylor – HMP Partnership. Industry experts and Academics will provide a simple outline of how Partnering works, introducing strategies and techniques that can be used to gain maximum commercial and social benefit for your organisation.

Attendees will have the opportunity to demonstrate their commitment to closer working through participation in a workshop exercise that will establish the Health and Safety Standards and Monitoring Processes for use in our future partnering agreements.

We look forward to welcoming both large and small contractors but request all attendees are able to speak for their business on both commercial and safety matters.

Please confirm your attendance or otherwise by completing and faxing back the reply form overleaf.

I look forward to welcoming you on the Tuesday 26th January 2005 at 13:00

For and on behalf of Shaylor Construction Limited

Ken Rawe

Procurement Manager

Enc Combined Event Agenda & Fax Back Form

Combined Event Agenda & Fax Back Form

Shaylor Construction Supplier H&S Event Wednesday 26 th January 2005		
Reception 13:00 at Jaguar Building (Grid No: p22 – Arrowed below)		
Programme		
13:00 – 13:15	Coffee	
13:15 – 13:20	Welcome & Introduction	
13:20 – 13:50	Partnering & SCL The Current Situation & Plans	
13:50 – 14:30	Getting The Best of Your Supply Chain & Partners	
14:30 – 14:45	Break & Networking	
14:45 – 14:55	The Future of Building Safely With SCL	
14:55 – 15:50	Setting the Standard – H&S Workshop	
15:50 – 16:00	Closing Announcements & Thanks	

Invited Attendees

D&I
 Measham
 Stratton Heating & Plumbing
 Kershaw
 Hamilton Reid
 Hulse Electrical
 Halsall Electrical
 Mowlem Technical Services
 Peter Hill
 Beacham Flooring
 Lawlors Decorators
 Castle Roofing
 Fairway Interiors
 Ceilings & Interiors
 Midlands Ltd
 PMC
 Comanwood
 Midland Erection
 Elliott
 PCSL
 ABK
 Classic Roofing
 K&D
 D. Norton



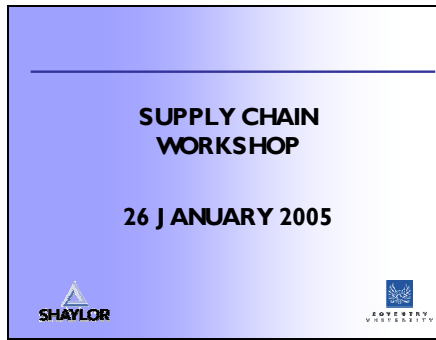
Response Form – FAX To 01922 745 604
Please Respond By 24 th January 2005

Name		
Position		
Company		
Please Circle	We Will Attend	We Can Not Attend

If Different to Above

Name of Attendee	
Position / Role	
Contact Phone No	

**APPENDIX F2: Presentations at the awareness day workshop at Coventry
University**



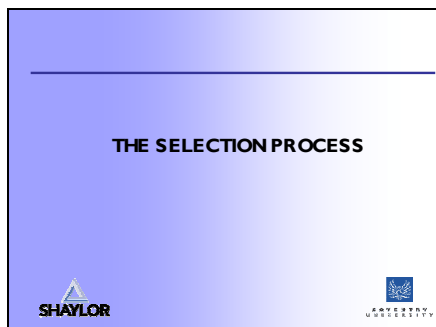
Introduction

- Welcome
- Thanks for coming
- Inaugural supply chain workshop

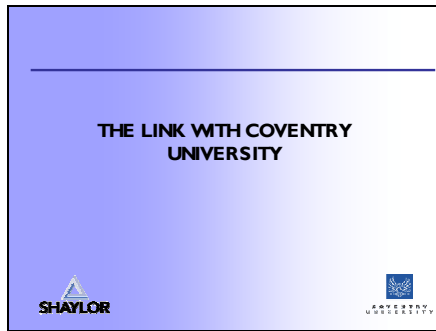


Introductions

- What companies are here?
- Representation from a number of our key subcontractors
- We will issue a contact list after the event, but have representation from:
- Castle Roofing
- Ceilings & Interiors (Midlands) Ltd
- Comanwood Construction
- D&I Building Services
- Fairway Interiors
- Halsall Electrical
- Kershaw Mechanical Services
- Measham Heating & Air Conditioning
- Midland Erection
- PMC Plant Hire



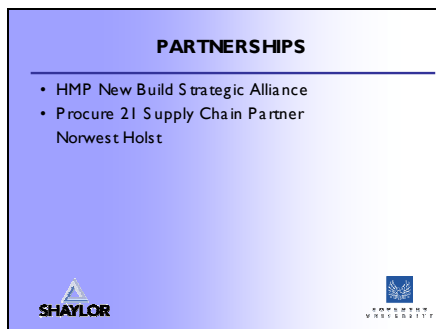
- Invitations were issued to companies who we had worked with successfully in the past, and wish to work with again.
- Some were unable to attend, but have committed to attend future events



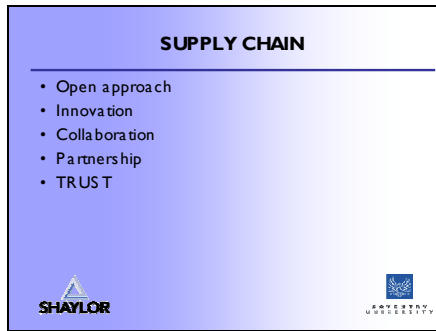
- Proud to be associated with Coventry University in this event
- We believe it to be the first one of its kind in the Midlands
- Attempting to bring together the entire supply chain, analyse and improve communications
- Particular focus on H&S
- Development of shared or mutual systems to meet the needs of future projects



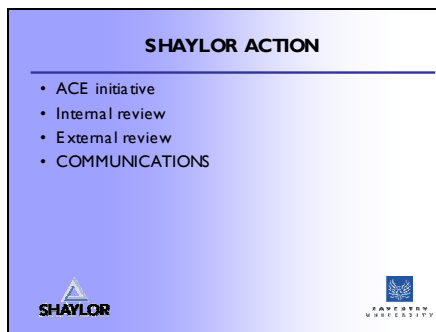
- Current position
- Future position
- How do we get there?



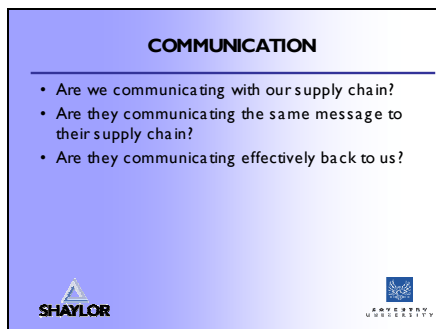
- Preferred contractor for Design & Build of Prison establishments in Midlands to East Coast
- Potential workload £20m PA
- 3 projects currently at cost plan stage
- Requirement for collaboration & innovation – whole life costing
- Shared systems – open book
- Measurement of service – Key Performance Indicators covering:
 - Quality
 - Price
 - Programme
 - Health & Safety
 - Defects
- Requirement to refine systems with supply chain
- Procure 21 – similar process and measurement systems
- KPI's will become key in the selection process
- No tendering!!

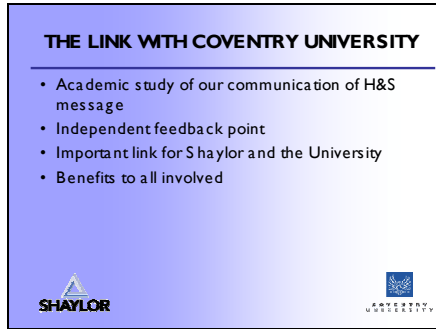


- If we are to go forward, we need to be working with a supply chain with a similar ethos
- We think the companies here today can work in this way
- We want to see:
 - open approach
 - innovation
 - collaboration
 - partnership
 - TRUST – most important
- This is not competitive tendering, but is about best value. KPI's and market tests will be used.
- Everyone should make a fair profit, but companies taking advantage of their position will be identified and action taken accordingly.

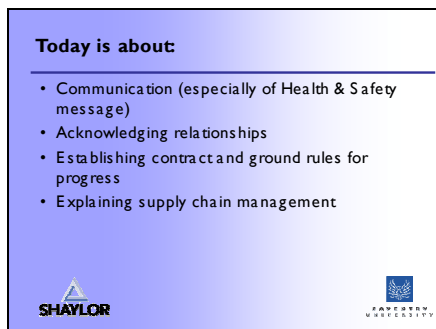


- 18 months – ACE initiative
- KPI's
- Construction Lean Improvement Programme
- Customer Satisfaction Surveys
- Supply Chain Review Process
- Will have been asked to fill in new forms for QA & H&S
- Review at end of project
- Bespoke software
- Internal Review – strengths & weaknesses
- External Review – feedback from you. Will be issued after this meeting
- Communications – the biggest area for improvement





- We were approached by Ike Diugwu from the University about being involved in a research survey for his PhD
- When talking it became evident that there were further benefits which we could derive
- Coventry University has close links with Jaguar, who are also being reviewed
- Important for Shaylor:
 - First of its kind
 - Knowledge and learning
 - New ideas
 - A route to training
- Important for University:
 - A major aspect of a current research programme
 - Link to construction industry
 - Introduction and opportunity to promote themselves to industry members
- Important for you:
 - Development of H&S systems
 - Improved communications and relationships with SCL
 - Training opportunities
 - Take to other projects



- We want to improve our supplier relationships, and gain value from working collaboratively. The old days of abdicating responsibility and ‘subbie-bashing’ are disappearing fast.
- We need to form partnerships to take us forward, and as key members of our supply chain, we hope that you will want to take the step with us.
- To a certain extent, it is a leap of faith, and I return to the watchword of TRUST
- Handover to Mark Hooper of Coventry University, who can explain much better than me why SCW is important, and why it will become more important in the future.
- He will also provide a whistle stop tour of the services that Coventry University has to offer, and outline some of the unique funding opportunities that exist at present for training.

APPENDIX G1: Post event questionnaire administered on 26 January 2005

Dear Participant,

As the representative of your company, I want to thank you for taken part in this event. Please help us to improve future events by taking a couple of minutes to tell us your views on the conduct of the event. We appreciate your involvement and want to make sure we meet your expectations.

How satisfied are you:

1 =Very satisfied, 2 =Satisfied, 3 =Neutral

4 = Dissatisfied, 5 = Very Dissatisfied

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

With the quality of the overall event?

With the scope of the information presented?

With the usefulness of the information presented?

With the quality of the presentations in the general sessions?

With the overall meeting format's emphasis on collaboration?

With time given network and share ideas with other companies?

With the amount of time dedicated to benefits of supply chain collaboration?

With the meeting's overall value in helping you improve your professional effectiveness?

That the meeting was a motivational experience for you?

That your company received appropriate recognition and appreciation for your contribution to the growth of the supply chain?

What recommendations would you offer for improvement?

Thank you for your feedback. We sincerely appreciate your honest opinion and will take your input into consideration when organising future events.

Yours sincerely



Ikechukwu Diugwu

FW106

School of Engineering, Coventry University, COVENTRY CV1 5LW

APPENDIX G2: Analysis of delegates' views on the event of 26 January 2005

■ Attendance

There were 11 delegates from 9 companies that attended (table 1). Table 2 shows the distribution of the companies according to their number of employees.

Table 1: Companies that attended

Company	Number of Delegates
Halsall Electrical	2
Mowlem Technical Services	1
PMC Contractors	1
Measham Heating & Air Conditioning	2
CIML	1
Midland Erection	1
D & I	1
Castle Roofing	1
Fairway Interiors Ltd	1
	11

Table 2: Distribution of attendance by company size (no of employees)

Size of Company	Frequency	Percent
10 - 49	6	66.7
50 - 249	2	22.2
250+	1	11.1
Total	9	100.0

■ Industrial Sector

A greater percentage of your suppliers in attendance were from the Construction sector (n = 6), while 2 companies were from the service sector. One company ticked two different industrial sectors, thus making it difficult to know which sector it belonged to.

Table 3: Distribution of attendance by industry sector

Sector	Frequency	Percent
Construction	6	66.7
Service	2	22.2
Total	8	88.9
Unclear	1	11.1
	9	100.0

■ **Number of years in business with Shaylor**

Cumulatively, the companies in attendance have been doing business with Shaylor for 69 years, ranging from a minimum of 4 years to a maximum of 35 years. It would seem that there is a high degree of supplier retention.

Table 4: Number of years in business with Shaylor

1.1.1	Years in Business	Frequency	Percent
	4	2	22.2
	5	4	44.4
	10	1	11.1
	15	1	11.1
	35	1	11.1
Total	69	9	100.0

Responses to questions on Health and Safety Management

Eight (8) out of nine (9) respondents felt that poor health and safety record affects their image as well as operations. However, one company felt that poor health and safety standard (records) does not affect its business operations and image.

Impact on business operations and image

	Impact on business operations	Impact on business image
	Count	Count
Yes	8	8
No	1	1

About 5 companies dedicate between 3 to 8 hours to health and safety management, 2 companies dedicate 10 hours, 1 company 40 hours, while another one dedicated 70 hours in a week.

All the companies stated that they have a health and safety policy. More than 50% of the companies felt that they had the necessary health and safety management tools. However, only 3 of the companies carry out health surveillance as part of the health and safety management.

When questioned about their source of information on health and safety matters, 6 companies said they go their information from the HSE, 5 companies assessed their

information from industrial network/safety groups as well as health and safety journals respectively.

On the major motivators for maintaining a good health and safety record, 9 companies cited health and safety legislation, requirement of customers, encouragement from customers, reduction in risk posed by company, protection of companies image as having great influence on them. Manager's commitment (8), improving competitiveness (7), pressure from employees (6), reducing insurance premiums (7) all influence health and safety to a great extend.

Below are the responses to some of the other questions. They are somehow straightforward to interpret.

■ **We are assessed informally on our health and safety standard by our customers**

		Frequency	Percent
Valid	Yes	5	55.6
	No	2	22.2
	Total	7	77.8
Missing	No response	2	22.2
Total		9	100.0

■ **We are assessed formally on our health and safety standard by our customers**

		Frequency	Percent
Valid	Yes	7	77.8
	No response	2	22.2
Missing			
Total		9	100.0

■ **Our customers set health and safety criteria that we must meet**

		Frequency	Percent
Valid	Yes	7	77.8
	No response	2	22.2
Missing			
Total		9	100.0

■ **Health and safety performance forms part of our contract conditions**

		Frequency	Percent
Valid	Yes	7	77.8
	No response	2	22.2
Missing			
Total		9	100.0

■ **Our customers rate health and safety performance highly as cost**

		Frequency	Percent
Valid	Yes	5	55.6
	No	2	22.2
	Total	7	77.8
Missing	No response	2	22.2
Total		9	100.0

■ **Is your company part of a network that shares health and safety good practice or information**

		Frequency	Percent
Valid	Yes	5	55.6
	No	4	44.4
	Total	9	100.0

■ **Is your company Part of supply chain initiative aimed at improving the performance of its members**

		Frequency	Percent
Valid	Yes	5	55.6
	No	4	44.4
	Total	9	100.0

■ **Are you willing to participate in a supply chain improvement initiative in order to improve health and safety in your company**

		Frequency	Percent
Valid	Yes	9	100.0

■ **Have received guidance from our customers**

		Frequency	Percent
Valid	Yes	8	88.9
	No	1	11.1
	Total	9	100.0

- **Benefited from improvement workshops and visits by our customers to educate us on how health and safety improvements can be made**

	Frequency	Percent
Valid Yes	7	77.8
No	2	22.2
Total	9	100.0

- **Will you support a scheme initiated by your customer aimed at improving its supply chain?**

	Frequency	Percent
Valid Yes	9	100.0

Will you like support in improving your health and safety record?

	Frequency	Percent
Valid Yes	9	100.0

- **Our customers communicate to us their health and safety criteria for using our services**

	Frequency	Percent
Valid Yes	9	100.0

- **We benefit from improvement workshops/seminars organized by our customers**

	Frequency	Percent
Valid Yes	9	100.0

- **We educate our suppliers through written materials**

	Frequency	Percent
Valid Yes	7	77.8
No	2	22.2
Total	9	100.0

- **Our customers help us improve our health and safety performance**

	Frequency	Percent
Valid Yes	9	100.0

- **Would you be interested in participating in a supply chain initiative as a means of achieving improvements in health and safety performance**

	Frequency	Percent
Valid Yes	9	100.0

- **We are interested in participating in a supply chain initiative aimed at improving our operations**

	Frequency	Percent
Valid Yes	9	100.0

- **We are interested in participating in a supply chain initiative aimed at improving our health and safety performance**

	Frequency	Percent
Valid Yes	9	100.0

- **We are interested in participating in a supply chain initiative aimed at improving our health and safety performance**

	Frequency	Percent
Valid Yes	9	100.0

■ **Satisfaction survey**

	Very satisfied	Satisfied	Neutral	Dissatisfied
	Count	Count	Count	Count
How satisfied are you with the quality of the overall event?	5	7		
How satisfied are you with the scope of the information presented?	4	6	2	
How satisfied are you with the usefulness of the information presented?	1	10	1	
How satisfied are you with the quality of the presentations in the general sessions?	5	7		
How satisfied are you with the overall meeting format's emphasis on collaboration?	2	7	3	
How satisfied are you with the time given to network and share ideas with other companies?	2	6	4	
How satisfied are you with the amount of time dedicated to benefits of supply chain collaboration?	5	2	4	1
How satisfied are you with the meeting's overall value in helping improve your professional effectiveness?	2	9	1	
How satisfied are you with that the meeting was a motivational experience for you?	2	7	3	
How satisfied are you with that your company received appropriate recognition for your contribution to the growth of the supply chain?	4	7	1	

■ **Recommendations for improvement**

1. None. Very good
2. More time on supply chain

Demonstration on how you assess sub-contractors on their ability during tender stage and how each new subcontractor will be presented to their competitors

**APPENDIX H: Satisfaction survey of the supply chain health and safety
workshop**

After Event Satisfaction Survey

Dear Participant,

As the representative of your company, I want to thank you for taken part in this event. Please help us to improve future events by taking a couple of minutes to tell us your views on the conduct of the event. We appreciate your involvement and want to make sure we meet your expectations.

Thank you

1. Name of Organisation: _____

2. Email: _____

	Yes	No
3. Did the event meet your expectations?	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

	Yes	No
4. Would you like to see this type of workshop become an annual event?	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

- | | | Yes | No |
|----|--|--------------------------|--------------------------|
| 5. | May we send wwT information to this email? | <input type="checkbox"/> | <input type="checkbox"/> |

Comments:

- | | | Yes | No |
|----|--|--------------------------|--------------------------|
| 6. | Would you like further information on training & competence? | <input type="checkbox"/> | <input type="checkbox"/> |

Comments:

**APPENDIX I: Analysis of responses by delegates to health and safety
workshop**

To: Directors and Heads of Departments
From: Ikechukwu Diugwu
Date: 3 November 2005

Subject: **Supply Chain Health and Safety (SHAD) Events**

Please find attached a summary of the supply chain health and safety workshop and demonstrations held on 27 October 2005 at the Ramada Hotel, Solihull and the Old Silhillians Memorial Ground, Knowle, Solihull, respectively, which I was assigned to organise and coordinate.

The event formed part of Shaylor Construction's strategy to improve health and safety awareness within its supply chain.

I would wish to draw your attention to the number of delegates from Shaylor's supply chain, as well as the positive feedback received at the end of the events.

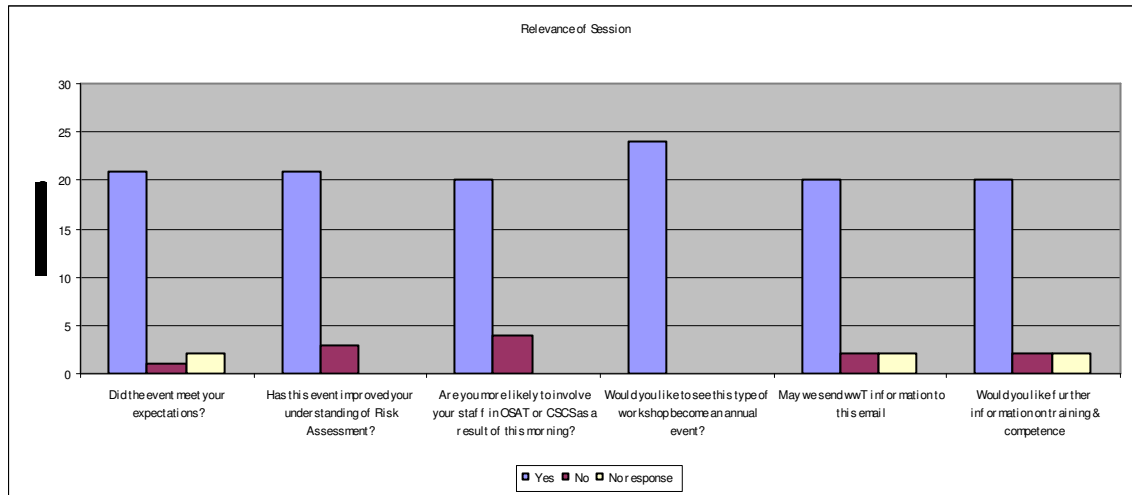
As a result of funds secured from other sources, the total cost of the event to Shaylor Construction was reduced to three hundred pounds (£300.00) only.

May I express my gratitude to the Management for the support offered during the organisation of the event?

Thank you.

Overall, the event was provided good value form money and many delegates would want to have it as and annual event.

The responses takes from the session evaluation forms completed by the delegates is summarised in the chart below.



Some aspects of the event did not meet the expectation of the delegates. For instance, some delegates felt that:

- The content is not detailed enough. Only general levels were covered
- There was not enough time for method statement information
- There was not enough time for discussion on Risk Assessment

When asked if there were any other health and safety topics that they would like to be addressed at similar events, some of the delegates felt that:

- Trade specific issues such as those relating to painting and decorating
- MOT works
- Site Management
- Falls from height and how it relates to unloading
- Regular update on H & S
- Noise and noise measurements
- Advice on formulating risk assessment
- Method statement analysis
- COSHH – new regulations and assessments

Most said they liked the involvement of the HSE and the talk (from the inspector's viewpoint) by Ray Cooke from HSE. Distribution of the talks as handouts would be useful.

One respondent felt that it was a very good way of promoting partnering.

**APPENDIX J: A progress report by the Ken Rawe - Procurement Manager
 of Shaylor (removed for copyright reasons)**

APPENDIX K: Overview of CLIP project

(Source: BUILDING RESEARCH ESTABLISHMENT, 2006)

Removed for copyright reasons

APPENDIX L: Further discussions on health and safety in SMEs

L.1 Health and safety in small and medium-sized enterprises

Although SMEs remain the most populous sector of the economy, knowledge about health and safety in them remain scarce (Smallman, 2001), so much so that the health and safety management in the sector remains relatively understudied and underserved (Stokols et. al., 2001). This has contributed to the poor level of health and safety management that is evident in the sector (Bibbings, 2003). There are evidences to suggest that smaller companies face greater challenges in developing and maintaining worksite health and safety programmes than their larger counterparts (Stokols et. al., 2001). SMEs also have higher rates and fatality of accidents than their larger counterparts (Nichols, 1995; Eurostat, 2000).

Figure L.1.1: Standardised incidence rate of accidents at work in EU-15 plus Norway by size of enterprise, 1996) (Source: Eurostat - ESAW data)

Figure L.1.1 above (Source: Eurostat – ESAW data) shows that fatal accident incidence rates (except for the case of self-employed without employees) seem to

increase as the size of the enterprise decreases. Similarly, the incidence rates or accidents at work with more than three days of absence, varies with the size of enterprises (rising from within the micro to small enterprises (size bands 0 to 49) and decreasing from medium enterprises onwards (50 and above). This is shown in Figure L.1.2 below (Source: Eurostat – ESAW data)

**Figure L.1.2: Accidents at work leading to more than three days of absence
(Source: Eurostat - ESAW data)**

There are suggestions that SMEs lag behind their larger counterparts in the management of workplace health and safety, especially in accident prevention. For instance, the European Industrial Relations Observatory notes that in Belgium, accidents at work are about 50% more frequent in SMEs than in larger companies (European Industrial Relations Observatory, 1999). Similar observations that small and medium enterprises are worse than larger organisation in health safety issues have been made in studies carried out in other countries (European Foundation for the

Improvement of Living and Working Conditions, 2000; European Commission, 1995; EIM, 1998).

Although anecdotal evidence suggests that the business case for a better health and safety management is yet to be fully appreciated by many SMEs, health and safety management still remain an important aspect of business management (Rimington, 1998). Subsequently, the Health and Safety Commission (HSC, 1993) observes that organisations that are successful actively manage all aspects of their businesses, including health and safety. As a result, there is a need for a further demonstration of the commercial benefits of good health and safety management to businesses, especially SMEs (Wright, 1998) where investments in health and safety improvement activities are still regarded as undesirable costs rather than as investments.

The need therefore, for an alternative strategy to health and safety improvement is compelling on realising that work place safety while involving technical interventions also requires the adoption of management, organisational, and training instruments that can influence risk behaviour (Scipioni *et al.*, 2001). Smallwood (1998) argues that the reliance on the coercive forces of inspections by regulatory agencies alone as a tool for promoting good health and safety practices in smaller businesses is no longer advisable. This is because factors such as the ratio of inspectors to businesses, geographical coverage as well as the relatively short life spans of SMEs make them a hard to reach sector (Fonteyn *et al.*, 1997).

In view of these, there have been calls to explore other worksite health and safety improvement initiatives (Wright, 1998) where SMEs may have to rely on the initiatives, knowledge and capabilities of other actors (De Bruijn and Hofman, 2000). Again, the absence of any organised trade union in many smaller organisations impacts on the extent to which employees influence decision on health and safety related matters within their organisations. The observed link between workers' involvement and rate of injury and illness at work support the argument that workers in a unionised environment are more likely to exercise their rights over health and safety at work than their non-union counterparts (Walters and Frick, 2000). This is essential because it is not very easy for SMEs to have these systems and mechanisms in place. SMEs are more often discouraged from investing in health and safety initiatives by factors such as ignorance and cost, lack of perceived financial benefit, lack of management commitment, complex health and safety legislation, lack of support, lack of knowledge of details and implications of contravening health and safety regulations and lack of resources.

Similarly, the fear of being punished for poor performance also affects their search for help and information from certain quarters. Undoubtedly, these tools and resources are better accessed through a network of organisations than through regulatory agencies/bodies such as the Health and Safety Executive. Again, according to Ring and Van de Ven (1994), a channel which is familiar to SMEs offers a greater degree of trust, loyalty and comfort. The supply chain network meets these criteria and should be explored if SMEs were to become fully aware of, and committed to, health and safety management and performance improvement initiatives.

There are arguments that additional levers and supports are needed if process regulation were to be used to achieve better health and safety arrangements and outcomes in small businesses. For example, Walters and Lamm (2003) observe a growing recognition that attention should be focused on those social and economic factors, even if are indirectly associated with occupational health and safety, if the challenges of preventive health and safety in small businesses were to be dealt with effectively. They argued that by linking health and safety to economically significant aspects of work in which the self-interest of small business employers can be manipulated to improve their health and safety arrangements, this strategy becomes a positive way to achieve the results so far eluding more traditional approaches to compliance. Walters and Lamm (2003, pp. 14-15) went further to note that:

“the means in which this is thought to be best achieved is through the use of processes and agencies that can act as push-pull factors, triggers, levers and social amplifiers to ensure that regard is given to the health and safety requirements in the business life of small businesses. For example:

Supply chain pressures can be brought to bear on small businesses that are in economically dependent relationships with larger businesses to persuade them that it is in their best business interests to have health and safety arrangements in place

Similarly, business dependency relationships between main employers and contractor/sub-contractors can be used to ensure that contractors have adequate OHS arrangements in place for their workforce before contracts are awarded or access to main work sites permitted and while work is undertaken”

The above view is supported by findings from a research survey which show that SMEs regard social networks as important channels through which they can access needed knowledge and information, and are keen to join or establish networks with key customers or buying group (Chen *et al.*, 2006).

L.2 Evidence of poor health and safety performance in SMEs and its impact on the economy

Available statistics within the UK and Europe show that a greater proportion of companies are SMEs (see Section 1.1). Thus, SMEs have become fundamental to the success of national economies (Johnston and Loader, 2003) so much so that any negative impact on this sector of the economy would have considerable effect on the whole economy. The impact of health and safety performance of SMEs on the economy is often established (or assessed) using output related data (Yapp and Fairman (2003). These data include information on the number of fatalities, accidents, injuries and work related ill-health, number of working days lost, turnover, number of enterprises, number of people employed, etc.

It is a legal requirement (Reporting of Injuries, Diseases and Dangerous Occurrences Regulation, RIDDOR, 1995 Act) to report accidents and ill health at work in the United Kingdom; and information from these sources help in the identification of sources of, and reasons why risk arise, as well as the investigation of serious accidents (Health and Safety Executive, 1999; Boyle, 2003).

While the above systems have been helpful in the collation and analysis of health and safety data, they however do not give a clear indication of the contribution of the different enterprise sizes to the overall figure. Therefore, there is a need for caution in any discussion pertaining to the level of contribution of any specific enterprise size to the overall health and safety statistics. For instance, during a telephone inquiry to the UK Health and Safety Executive, the researcher was told that the sizes of business enterprises were not systematically recorded by the Incident Contact Centre. Thus,

the data held by the Health and Safety Executive were not usually broken down according to enterprise size and this poses a degree of difficulty in ascertaining the degree to which each group contribute to the overall health and safety statistics. This observation/experiences notwithstanding, there are however other analyses, studies and datasets which have helped in assessing how different enterprise sizes have contributed to the overall picture.

The huge impact of lost working days on a nation's economy has been acknowledged by organisations such as the Commission of European Communities (2002). In view of this, one can only imagine how the estimated 40 million working days lost in the UK in the period 2001/02 (Health and Safety Executive, 2003b) might have affected the UK economy. Similarly in 1997, across the Organisation for Economic Co-operation and Development (OECD) countries, an estimated \$122 billion were spent on compensations and benefits resulting from health and safety matters.

From Table L.2.1 below, it could be seen that cumulatively, small and medium-sized enterprises in Europe have higher number of accidents and standardised incidence rates than larger organisations between the period 19994 - 2000 (Eurostat, 2002).

Another set of statistics (Table L.2.2 below) reveals that the severity and fatality of accidents at work are higher in SME than in their larger counterparts (Eurostat, 2004).

Table L.2.2: Contribution of SME and Large Scale Enterprises (LSEs) to the number of enterprises, employment, and severity of accidents in Europe, 2002 (Source: Eurostat, 2004)

	SME	LSE	Total
(1)			

There is also a dominance of SMEs in those sectors (for example agriculture, hunting, forestry, fishery, and construction) that are traditionally regarded as high risk (DTI Small Business Service, 2003). Hence, the observation by the Health and Safety Commission (2003), the number of reportable injuries in both construction and agriculture sectors are statistically, significantly higher than the average rate for all industry types. Based on these statistics, it is then logical to conclude that SMEs contribute significantly to the overall levels of illnesses, injuries and their associated cost in UK. High risk sector is defined in this thesis as a sector with a higher rate and fatality of accidents than other sectors. The data contained in

Figure L.2.1 (Source: Health and Safety Commission, 2001) below further suggests that the rate of accidents and injuries is higher in small and medium-sized enterprises than in their larger counterparts (Health and Safety Commission, 2001).

Figure L.2.1: Incidence rate of fatal injuries in small and larger manufacturing workplace 1994/95 – 1999/2000 (Source: Health and Safety Commission, 2001)

The risks from supply interruption - ranging from delivery to quality problems were of great concern to many organisations (O’Keeffe, 2005). Thus, the risk or opportunities in any part of the supply chain can affect the entire chain; and in some industries, supply chain performance has become a real competitive differentiator. This is because the competitive advantage enjoyed by any company over its competitors depends on the extent to which an industry or sector has the potential for growth and/or to generate an attractive return on direct and/or other forms of investment, as well as on its ability to produce and deliver goods and services at lower costs, or at a price premium because of superior or differentiated quality, design and delivery (Kay, 2002). These views when considered within the context of a heavily outsourced market economy, serves as a justification for any interest in, as well as investment in supply chain health and safety improvement. It is also important to recognise the impact of the performances of suppliers in the lower tie on the

competitiveness of organisations (Rhodes and Carter, 2003), and the effect of any managerial/operational problems encountered by these suppliers on their clients' operations. Therefore, the degree to which a company manages its supply chain is a major determinant to its success (Christopher, 1998).

APPENDIX M: A practical example of supply chain risk management

M.1 A practical example of a supply chain risk management

Norman and Jansson (2004) describe Ericsson's approach to supply chain risk management. This was developed following a fire accident in a very small production cell at the premises of one of its sub-supplier's plant in Albuquerque, New Mexico USA, on March 18, 2000. Ericsson is the largest mobile telecom system supplier in the whole world, with about 61,000 people on its payroll. About 40% of all mobile phone calls are made through its systems.

In spite of this credential, the consequence of the fire which lasted for about 10 minutes was a loss of about \$400 million. This resulted from gaps in the supply of a component from the supplier, a 3-week disruption to production, a 50% operation capacity of the plant for almost six months, and an estimated insured business interruption cost of \$200 million. Based on this incident, Ericsson developed a system aimed at "minimizing risk exposure in the supply chain" as shown in Figure M.1.1 (Source Norman and Jansson, 2000, p. 442) below. The system was firmly rooted in a risk management process which includes risk identification, risk assessment, risk treatment, and risk monitoring. Central to these processes are incident handling and contingency planning.

Figure M.1.1: Ericsson's basic approach to supply chain risk management (Norman and Jansson, 2004, p. 442)

Risk identification: this is done through an upstream mapping of the supply chain, looking at suppliers as well as their products and or services, and establishing the critical parts and risk sources in the process. The purpose of this is to have a clearer understanding of the probability and impact of the risks

Risk assessment is a detailed analysis of the suppliers and sub-suppliers of Ericsson's critical parts. Figure M.1.2 (Source: Norman and Jansson, 2004, p. 446) below shows a risk management evaluation tool used by Ericsson for assessing risk. This tool is divided into business control, financial issues, natural and man-made hazards, hazards at site, and business interruption handling. The evaluation tool is used mainly to identify operational accidents and catastrophes and to devise strategies to avoid any interruption to business. Any identified risk or uncertainty is discussed at workshops which have been organised to brainstorm and put in place preventive measures.

Figure M.1.2: Ericsson risk management evaluation tool (Norman and Jansson, 2004, p. 446)

- Risk treatment/management is the supply chain risk management system where risk mitigation strategies are developed, taking into consideration the source of the risk, its probability and consequence, the costs of risk lessening strategies. It also makes a comparison of the costs of the different preventive actions, and also assigns responsibilities to individuals.
- Risk monitoring is used in instances where the risk level is either very high, or high and not mitigated.

Incident handling and business continuity planning is put in place to decrease the consequences of an accident. This process is shown in Figure M.1.3 (Source: Norman and Jansson, 2004, p. 450) below.

Figure M.1.3: System for incident handling (Norman and Jansson, 2004, p. 450)

The entire process of risk management within Ericsson supply chain is shown in
(Source: Norman and Jansson, 2004, p. 451) below.

Figure M.1.4: Ericsson's risk management model (Norman and Jansson, 2004, p. 451)

Because different people from different sections of Ericsson, or indeed different companies are entrusted with responsibility for ensuring the efficiency of the system, there is a likelihood of confusions about responsibility. To avoid this, a responsibility grid was developed to specify who is responsible for what. This grid is shown in FigureM.1.5 (Source: Norman and Jansson, 2004, p. 444) below. However, the supply chain manager still has the key responsibility for administering the risk management model within their respective supply chains.

Figure M.1.5: Responsibility grids (Norman and Jansson, 2004)

**APPENDIX N: A progress report by Darren Cobbs – Health and Safety
Manager of Shaylor (removed for copyright reasons)**

APPENDIX O: Suggested survey questionnaire for future work

Section 1: Awareness and Commitment

		Importance to Your Organisation				Reality of Current Ethos and Practice			
		Vital	Important	Useful	Irrelevant	True	Largely True	Largely Untrue	Untrue
1	At all levels there is a general understanding of how and why health and safety should be managed across the supply chain	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	A member of the senior management champions health and safety management across supply chain	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	The board is committed to managing health and safety across the supply chain	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Senior management demonstrates good health and safety management by policies, guidelines, and actions	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Senior management supports and is seen to support health and safety across the supply chain and other desirable health and safety culture	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	Supply chain health and safety management is recognised throughout the supply chain as a permanent and critical component of business strategy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	The strategic and operational effectiveness of health and safety management across the entire supply chain is under continual review, and feedback and control systems are in place	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Section 2: Strategies to encourage health and safety management

		Importance to Your Organisation				Reality of Current Ethos and Practice			
		Vital	Important	Useful	Irrelevant	True	Largely True	Largely Untrue	Untrue
1	There is a programme of initiatives in place to improve health and safety within the supply chain	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	There is a clear vision of how health and safety should be integrated with core supply chain strategy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	There are defined responsibilities for the integration of health and safety with the core supply chain management strategy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Supply chain health and safety improvement initiatives are prioritised with 'normal' business activities, and such initiatives have an appropriate and clear budget	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Methods of sharing information on good health and safety management practices are set, and definitions of key information, its creation, its dissemination, and its management are clear	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	Organisations within the supply chain take responsibility for and ownership of health and safety improvement initiatives	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Section 3: Applying and Utilising Improvement Initiatives

		Importance to Your Organisation				Reality of Current Ethos and Practice			
		Vital	Important	Useful	Irrelevant	True	Largely True	Largely Untrue	Untrue
1	Ideas to utilise initiatives are monitored, reviewed and, and acted on, for potential health and safety improvement	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	Internal methods are monitored and reviewed for examples of best practices, and these are disseminated and encouraged	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Information provision is targeted at key decision points in major supply chain business processes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Regulatory and policy requirements guide the adoption of improvement initiatives in our supply chain	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Section 4: Monitoring and Review

		Importance to Your Organisation				Reality of Current Ethos and Practice			
		Vital	Important	Useful	Irrelevant	True	Largely True	Largely Untrue	Untrue
1	Key performance indicators for health and safety management are in place	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	The impact of health and safety on the overall performance of the supply chain is measured regularly	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Senior level action is taken in response to risk assessments as a means to improve business effectiveness	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	We review current performance of our core suppliers	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	We assess the management interest of our suppliers to health and safety management and understand their strategies	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Section 5: Organisational Structure and Processes

		Importance to Your Organisation				Reality of Current Ethos and Practice			
		Vital	Important	Useful	Irrelevant	True	Largely True	Largely Untrue	Untrue
1	Formal systems exist to encourage and facilitate the inter-organisational dissemination of health and safety information	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	A systematic information chart is in place to direct member organisations to information sources	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Informal inter-organisational information sharing networks are propagated	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Appropriate access to cross-organisational information is given to all relevant users in relevant format	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Information is disseminated effectively and efficiently	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Section 6: Human Resources

		Importance to Your Organisation				Reality of Current Ethos and Practice			
		Vital	Important	Useful	Irrelevant	True	Largely True	Largely Untrue	Untrue
1	A dedicated personnel responsible for supply chain health and safety implementation is in place and, has a clear and effective role with high level authority	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	The creation storage, analysis, and dissemination, of health and safety information is undertaken by committed health and safety personnel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Inter-organisational teams are formed and managed effectively and efficiently	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Best practice and fresh ideas are disseminated by dedicated health personnel who are visit other members of the supply chain from time to time	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Section 7: Culture

		Importance to Your Organisation				Reality of Current Ethos and Practice			
		Vital	Important	Useful	Irrelevant	True	Largely True	Largely Untrue	Untrue
1	Failure is recognised as an opportunity to learn	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	Recording and sharing information is routine and commonplace	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	It is a natural, standard procedure to avoid similar incidents re-occurring, by looking for best practice and re-useable work	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Hoarding of information is viewed as selfish and a weakness, whilst information sharing is perceived to strengthen the individual organisation and the supply chain	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Creative and critical thinking is valued, and this is indicated by appropriate time being given to this	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	Only confidential or personal information is access restricted	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Staff treat changes in day to day working as normal	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8	There is an atmosphere of trust, and our suppliers are generally able and our willing to help each other, without personal or organisational rivalries or politics	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Section 8: External Factors

		Importance to Your Organisation				Reality of Current Ethos and Practice			
		Vital	Important	Useful	Irrelevant	True	Largely True	Largely Untrue	Untrue
1	There is a system in place to collect, categorise, analyse, and disseminate market and rival chain intelligence	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	There is a programme of external participation in discussion forums to share and learn new ideas and experiences	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Relationships with clients and suppliers are enhanced by sharing appropriate resources	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Customers, suppliers, and rivals, recognise the organisation as being proactive in managing health and safety	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Ideas for new alliances to increase health and safety performance are continually monitored, reviewed, and acted upon where suitable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Section 9: Incentives

		Importance to Your Organisation				Reality of Current Ethos and Practice			
		Vital	Important	Useful	Irrelevant	True	Largely True	Largely Untrue	Untrue
1	Health and safety performance is monitored, reviewed and built into the mainstream performance appraisal and reward system	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	Good health and safety management is actively promoted on a day to day basis	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Poor health and safety management is actively discouraged on a day to day basis	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Organisations are clearly and visibly rewarded for team work, information sharing, and dissemination of good practice	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	From selection onwards, suppliers are expected and encouraged to attend training and development programmes in good health and safety management practices	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Section 10: Maintenance and security

		Importance to Your Organisation				Reality of Current Ethos and Practice			
		Vital	Important	Useful	Irrelevant	True	Largely True	Largely Untrue	Untrue
1	Out of date information is updated and new information is added from appropriate sources by means of timely review	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	Regulatory and policy requirements are published clearly and widely, and effective compliance monitoring systems are in place	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>